SYSTEM FAILURE
HOW TO BOUNCE BACK!
(SEE PAGE 64)

10 BEST WINDOWS FAX PROGRAMS

COMPUTE

NOVEMBER 1993

5 WINDOWS POWER TOOLS

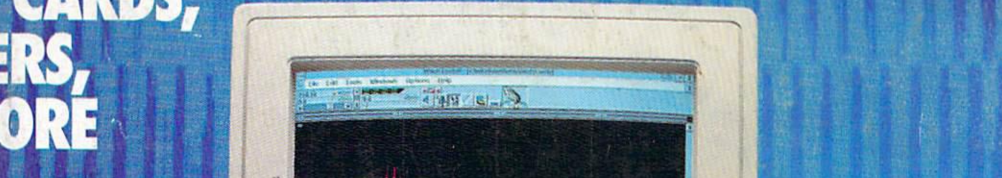
BUILT-IN FEATURES THAT CAN SUPERCHARGE YOUR DESKTOP

PLUS!

GOLF COURSE DESIGN
BUS BASICS AND BEYOND
WHO NEEDS 600 DPI?

MAKE WINDOWS SING!

EXPERT'S GUIDE TO SOUND CARDS, SPEAKERS, AND MORE


ALR
Multimedia PC
ALR
EVOLUTION
YAMAHA

U.S. $2.95

11

0 71486 02193 3

CITIZEN™

Your Notebook Printing Partner.

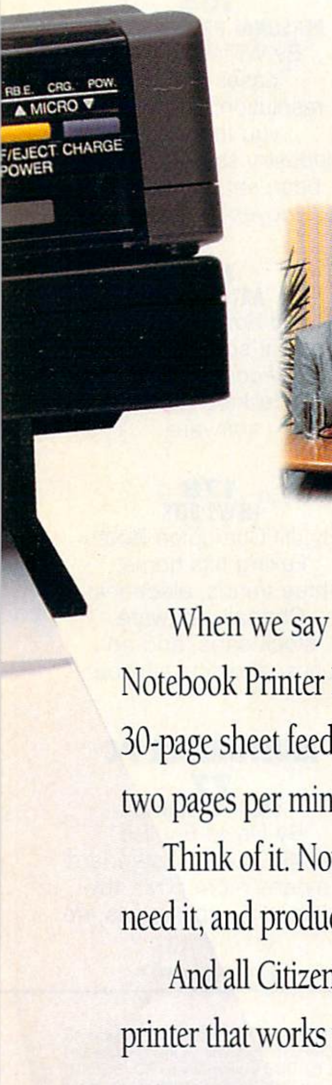
At home, at the office, or on the road, the Citizen Notebook Printer II works where you work.

With laser-quality text, graphics, and special-image color, the Notebook Printer II is your small-business printing partner.

©1993 Citizen America Corporation. Citizen America Corporation, Citizen logo, The Citizen Notebook Printer II and Service Select Program are registered trademarks of Citizen America Corporation.

Circle Reader Service Number 174

The Citizen Notebook Printer II. It works where you work.



When we say Citizen works where you work, we mean it. On your desktop or on the road, the Notebook Printer II is the perfect companion to your PC. With its built-in, 5-page sheet feeder or optional 30-page sheet feeder, you'll get laser-quality text and graphics wherever your work takes you. You'll also get two pages per minute output and Special-Image Color. All for a surprisingly low price.

Think of it. Now you can use your printer at your desk or in just about any location, use color when you need it, and produce professional-looking results. The Notebook Printer II really is the perfect PC companion.

And all Citizen printers come with Citizen's exclusive Service Select Program™. For more information on the printer that works where you work, call 1-800-4-PRINTERS for a Citizen Notebook Printer II dealer near you.

CITIZEN™

The Notebook Printer II. It works where you work.

COMPUTE

VOLUME 15, NO. 11, ISSUE 158 NOVEMBER 1993

FEATURES

12

BUILT-IN WINDOWS POWER TOOLS

By Robert Bixby

An alphabet soup of extraordinary features comes packaged with Windows. But what do they do, and how can you put them to use?

20

TEST LAB

Edited by Mike Hudnall

Reviews by Richard C. Leinecker

Get the facts on Windows fax programs, with head-to-head reviews of the ten best.

68

INFINITE EXPANSION

By Paul C. Schuytema

The hottest news in computers is arriving by bus. What's new inside the computer is the way peripherals are connected to the CPU.

102

PRODUCTIVITY CHOICE

By Tom Campbell

PC Tools for Windows from Central Point Software. Is it the best set of Windows utilities to date?

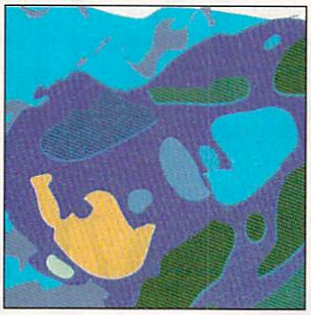
COLUMNS

10

EDITORIAL LICENSE

By Clifton Karnes

Our new Multimedia PC section plus more about COMPUTE on America Online.



Cover photo by Mark Wagoner of ALR Evolution IV, running Turtle Tools for Multimedia from Turtle Beach Systems.

46

NEWS & NOTES

By Jill Champion Booth

Virtual reality for kids, IBM's new Plug 'n Run speakers, big-screen game playing, and more.

49

FEEDBACK

Facts about fast cache, parallel and serial ports demystified, lotto basics, and more answers to tough questions.

54

INTRODOS

By Tony Roberts

DOS 6's Defrag command.

56

WINDOWS WORKSHOP

By Clifton Karnes

RoboHELP 2.0 makes creating Windows Help files a snap.

58

PROGRAMMING POWER

By Tom Campbell

Spreadsheet programming with di-ogix.

60

TIPS & TOOLS

Edited by Richard C. Leinecker

Tips from our readers.

64

HARDWARE CLINIC

By Mark Minasi

How many heads, cylinders, and sectors does your hard disk have? If you ever lose your setup, you'll need to find out quick.

104

PERSONAL PRODUCTIVITY

By William Harrel

Laser printer resolution: Just when you think an industry standard has been set, somebody moves the mark.

106

ART WORKS

By Robert Bixby

A look at some interesting, low-cost graphics and desktop publishing software.

178

NEWS BITS

By Jill Champion Booth

Faxing hits home, three trends, electronic Chagall, software stock sags, and an unusual online service.

MULTIMEDIA PC

77

FAST FORWARD

By David English

The MPC Level 2 standard means more powerful multimedia applications are on the way.

Continued on page 8.

COMPUTE (ISSN 0194-357X) is published monthly in the United States and Canada by COMPUTE Publications International Ltd., 1965 Broadway, New York, NY 10023-5965. Volume 15, Number 11, Issue 158. Copyright © 1993 by COMPUTE Publications International Ltd. All rights reserved. COMPUTE is a registered trademark of COMPUTE Publications International Ltd. Distributed worldwide (except Australia and the UK) by Curtis Circulation Company, P.O. Box 9102, Pennsauken, NJ 08109. Distributed in Australia by The Horwitz Group, P.O. Box 306, Cammeray NSW 2062 Australia and in the UK by Northern and Shell Plc., P.O. Box 381, Millharbour, London E14 9TW. Second-class postage paid at New York, NY, and at additional mailing offices. **POSTMASTER: Send address changes to COMPUTE Magazine,** P.O. Box 3245, Harlan, IA 51537-3041. Tel. (800) 727-6937. Entire contents copyrighted. All rights reserved. Nothing may be reproduced in whole or in part without written permission from the publisher. Subscriptions: US, AFO - $19.94 one year; Canada and elsewhere -$25.94 one year. Single copies $2.95 in US. The publisher disclaims all responsibility to return unsolicited matter, and all rights in portions published thereof remain the sole property of COMPUTE Publications International Ltd. Letters sent to COMPUTE or its editors become the property of the magazine. Editorial offices are located at 324 W. Wendover Ave., Ste. 200, Greensboro, NC 27408. Tel. (919) 275-9809.

Printed in the USA by R. R. Donnelley & Sons Inc. #R126607415

Push
COMPAQ
PRESARIO

CONGRATULATIONS. YOU'VE JUST SET UP A COMPUTER THAT CAN EDIT YOUR NOVEL, BALANCE YOUR CHECKBOOK, AND BEAT YOU AT SOLITAIRE.

(What Would You Like To Do Next?)

Before you become mesmerized with what the new *all-in-one* Compaq Presario can do, let's talk about some of the traditional computer things you won't be doing. Like sweating your way through manuals and messing with cables. Memorizing weird commands and all the other stuff that makes you feel like the computer engineer you never wanted to be.

With Presario, it only takes around seven minutes to take it out and plug it in (eight if there's packing tape). It comes already loaded with five different software programs–plus step-by-step Compaq learning tools–to help you get started. That way you can get on to a lot more meaningful things.

Like counting all of the money you just saved.

COMPAQ

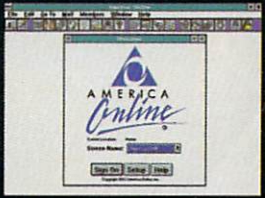
Quicken 2 for Windows - QDATA
File Edit Activities Lists Reports Preferences Window Help
Income and Expense Graph
Write Checks
COMPAQ PRESARIO
COMPAQ
COMPAQ

The computer that's more than just a computer. With MaxFax, you can send and receive faxes right from your computer.

There's no reason to spend a fortune buying software. With PFS:WindowWorks all of the basics are already included.

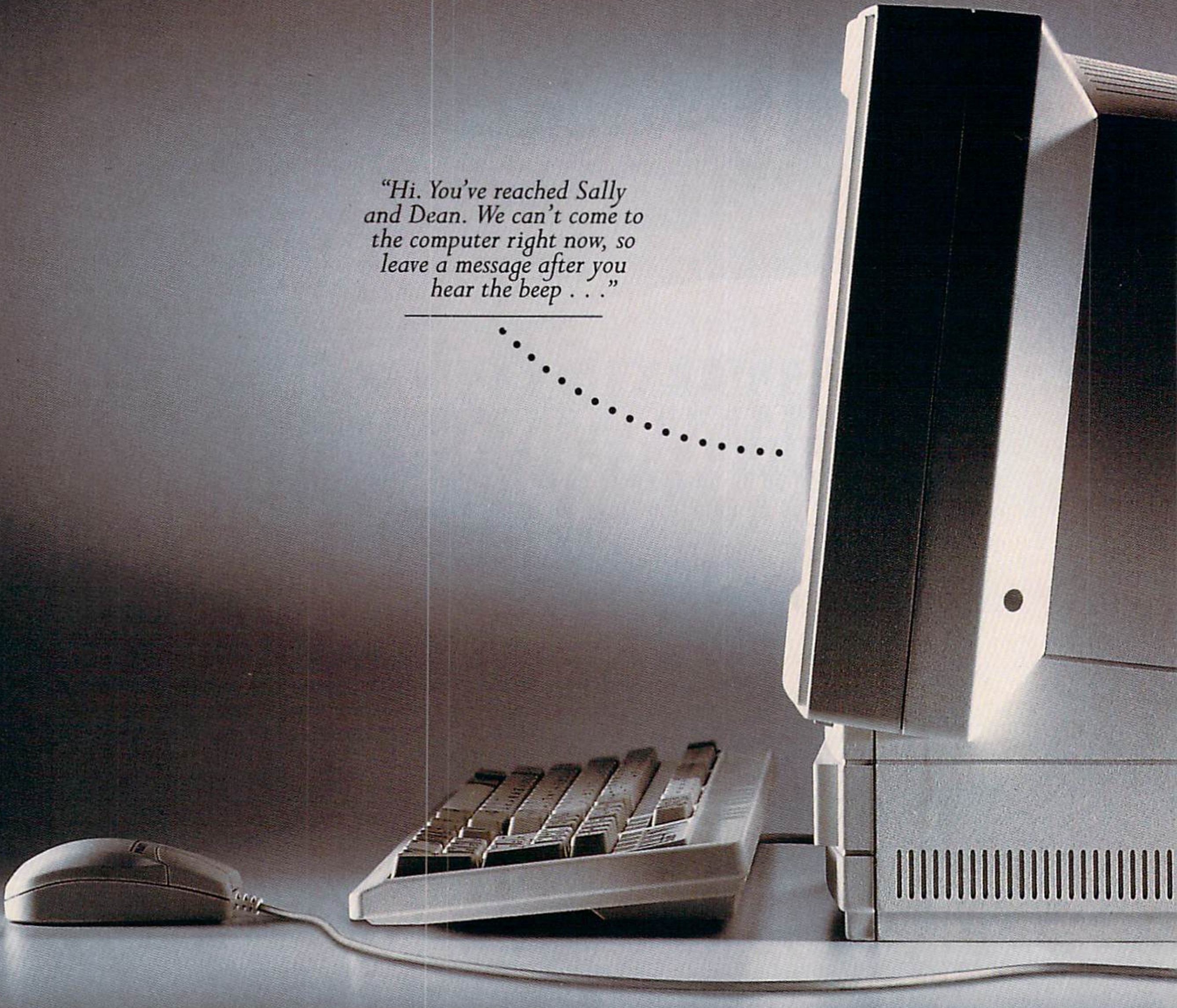
WEATHER MAP

Prodigy lets you make all your own travel arrangements, check the weather forecast, or get up-to-the-minute financial news.


AMERICA Online
Sign On
Setup
Help

With America Online, you can check the latest news, shop, or explore the hundreds of different services that are available.

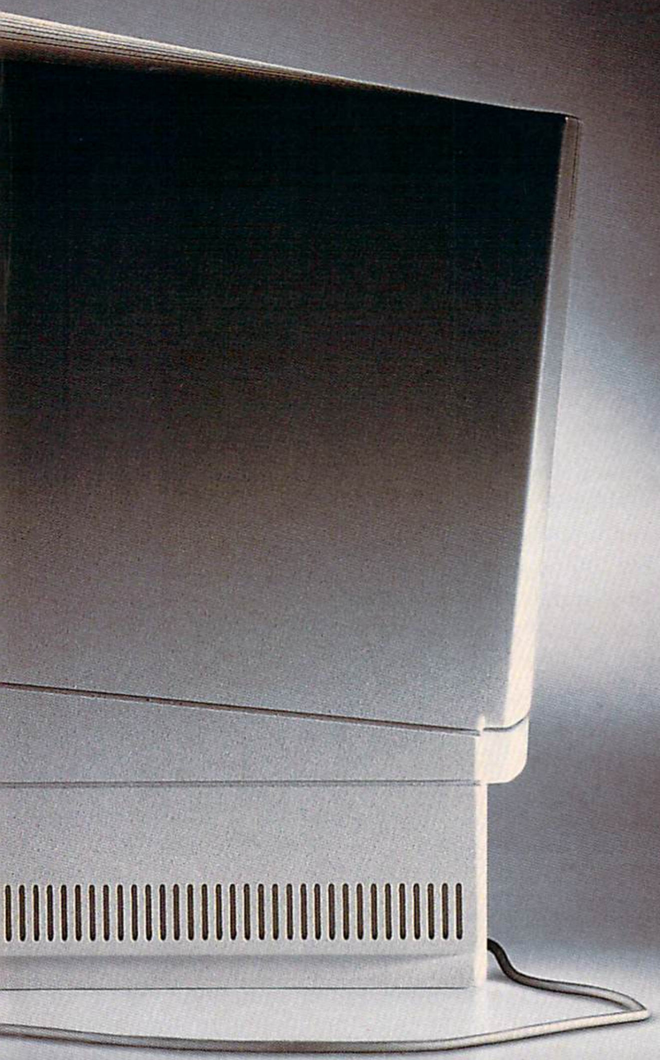
IT CAN ANSWER YOUR
IT CAN EVEN ANSWER Y

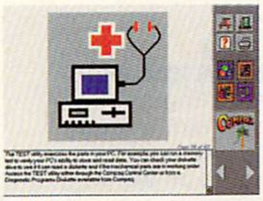


"Hi. You've reached Sally and Dean. We can't come to the computer right now, so leave a message after you hear the beep . . ."

©1993 Compaq Computer Corporation. All rights reserved. Compaq and the Compaq logo registered U.S. Patent and Trademark Office. Presario, Compaq Learning Center, and Personal Message Center are trademarks
online interactive computer services. MaxFax is a trademark of Prometheus Products, Inc. The Intel Inside Logo is a registered trademark of Intel Corporation. Product names mentioned herein may be trademarks of their

QUESTIONS.
OUR PHONE.





With Compaq learning tools, and our free 24-hour hotline and 3-year warranty, you get all the support you need.

The Presario 400 is so much more personal than most personal computers. Case in point. The built-in answering machine actually gives everyone you live with their own Personal Message Center. So it records your voice. And Sally's. And Dean's. And so on. Plus, there's a built-in fax (eliminating one more ugly black box from your personal space).

Most personal of all is the way Presario answers your questions. Quickly, directly and in plain English. (Remember when you needed help just to find the Help command?) With Presario, we want you to be able to do everything with your computer.

Except waste a lot of time just figuring out how to use it.

For more information on Presario, or for a location nearby where you can get a closer look, just call 1-800-345-1518.

COMPAQ

of Compaq Computer Corporation. America Online and Prodigy are fee-based
respective companies.

Circle Reader Service Number 209

COMPUTE

VOLUME 15, NO. 11, ISSUE 158 NOVEMBER 1993

78
OPEN WINDOWS TO SOUND
By David English
With a sound card, a pair of speakers, and the right software, you're on the way to multimedia.

86
NEW MULTIMEDIA PRODUCTS
Edited by Lisa Young and Phillip Morgan
The hottest new apps and the coolest new hardware.

100
MULTIMEDIA SPOTLIGHT
By Clayton Walnum
PC Karaoke from Sirius Publishing and Soft Karaoke from Tune 1000.

ENTERTAINMENT

108
DISCOVERY CHOICE
By Clayton Walnum
Where in Space Is Carmen Sandiego? from Brøderbund.

112
GAME INSIDER
By Shay Addams
A look at the hottest new games and Spectrum HoloByte's merger with MicroProse.

114
ENTERTAINMENT CHOICE
By Scott A. May
Inca from Coktel Vision/Sierra.

116
GAMEPLAY
By Paul C. Schuytema
What's new on the wild frontier? Pharmacy? Al Lowe talks about Freddy Pharkas.

MULTI
PC
MEDIA

Computer illustrations for the new Multimedia PC section by Rob Schuster.

New in this issue of COMPUTE is the first installment of a regular special section on multimedia, called Multimedia PC. To get started with our new Multimedia PC section, first turn to "Fast Forward" on page 77 for a look at the hot-off-the-press MPC Level 2 standard and an explanation of what it means to you. Then flip over to page 78 for our feature, "Open Windows to Sound," and get the scoop on just what's involved in adding sonic splendor to Windows. Next, take a look at "New Multimedia Products" on page 86 for info on leading-edge multimedia hardware and software. And finally, turn to page 100 for "Multimedia Spotlight," which tells you how to turn your multimedia PC into a Karaoke machine. So buckle your seat belts, turn to the Multimedia PC section, and crank up the volume on your PC.

118
THE GREENING OF AMERICA
By Richard O. Mann and Ramona R. Mann
Building a virtual golf course that feels like the real thing is all work and all play.

REVIEWS

126
ALR Evolution IV MPC,
Cyrix Cx486DRx²,
Wing Commander Academy,
Syndicate,
Home Medical Advisor Correction,
Panasonic KX-P2023,
National Lampoon's Chess Maniac 5 Billion and 1,
Battle Chess 4000,
Kiplinger's CA-Simply Money,
Stylus 800,
Thunder Board,
Michael Jordan in Flight,
The Oregon Trail,
A Place for My Stuff,
ComputerWorks,
Visio,
Sherlock,
Mystery at the Museums,
V for Victory: Market Garden,
Tony La Russa Baseball II,
Lost Secret of the Rainforest,
War in the Gulf,
and LabelWriter II Plus.

COMMODORE 64 AND 128 USERS
Learn how to program the SID chip, add a RAM drive to your system, and more. Turn to the section following page 122 for great articles, programs, and tips.

ADVERTISERS INDEX
See page 155.

EDITORIAL: Editor: Clifton Karnes; Art Director: Robin C. Case; Managing Editor: David English; Features Editor: Robert Bixby; Reviews Editor: Mike Hudnall; Gazette Editor: Tom Netsel; Entertainment Editor: Denny Atkin; Senior Copy Editor: Karen Huffman; Copy Editor: Margaret Ramsey; Editorial Assistant: Polly Cillpam; Contributing Editors: Sylvia Graham, Eddie Huffman, Tony Roberts, Karen Siepak; Interns: Phillip Morgan, Lisa Young; ART: Assistant Art Director: Kenneth A. Hardy; Designer: Katie Murdock; Copy Production Manager: Terry Cash; PRODUCTION: Production Manager: De Potter; Traffic Manager: Barbara A. Williams; PROGRAMMING & ONLINE SERVICES: Manager: Troy Tucker; Programmers: Bruce M. Bowden, Steve Draper, Bradley M. Small; COMPUTE ADMINISTRATION: President, COO: Kathy Keeton; Executive Vice President, Operations: William Tynan; Editorial Director: Keith Ferrell; Operations Manager: David Hensley Jr.; Office Manager: Sybil Agee; Sr. Administrative Assistant: Julia Fleming; Administrative Assistant: Lisa G. Casinger; Receptionist: LeWanda Fox; GMI ADMINISTRATION: Sr. VP, CFO: Patrick J. Gavin; EVP/Corporate Services: Jeri Winston; VP Director Sales Promotions: Beverly Greiper; Dir. Newsstand Circulation: Paul Rolnick; Dir., Newsstand Operations: Joe Gallo; Dir. Subscription Circulation: Beatrice J. Hanks; VP Director of Research: Robert Rattner; Advertising Production Director: Charlene Smith; Traffic Dir.: William Harbutt; Dir., Budget and Finance: Tom Maley; Production Mgr.: Tom Stinson; Asst. Production Mgr.: Nancy Rice; Mgr., International Div.: George Rojas; Exec. Asst. to Bob Guccione: Diane O'Connell; Special Asst. to Bob Guccione: Jane Homlish.

HOW TO BUY A DOUBLE-SPEED CD-ROM... WITHOUT GETTING TAKEN FOR A DRIVE.

Introducing Creative OmniCD.

If you've been thinking about adding the power and excitement of an internal CD-ROM to your PC, here's some great news: thanks to our exclusive Creative Double-Speed Technology,™ *double-speed CD-ROM performance is now available at about the same price you'd expect to pay for a single-speed drive.*

And we're not talking about just any CD-ROM here. This is a full-featured, MPC 2 compliant, XA-ready, 300KB/second, multi-session photo CD drive with a blistering fast 320ms access time: The all-new Creative OmniCD.™

CREATIVE
PHONES
VOL.
BUSY

WORKS WITH ANY SOUND CARD.

Of course Creative OmniCD works with your Sound Blaster™—after all, it is the industry standard for PC audio. But what if you've already got another sound card?

No problem. Because *Creative OmniCD works perfectly with just about every major brand of audio card*...or even *without* a sound card for applications that don't use audio.

Best of all, Creative OmniCD opens up a whole new world of CD-ROM applications. Like photo CD—we've even included Aldus® Photostyler™SE image enhancing software right in the box. And also games, multimedia and business applications, education, and more.

CREATIVE
OMNICD
NEW!

THE BOTTOM LINE: A LOT MORE DRIVE, A LOT LESS MONEY.

Sure, there's plenty of other manufacturers offering double-speed CD-ROM drives. But as part of a complete package *with an SRP of less than four hundred dollars?** Now *that's* Creative.

For more information and the name of your nearest Creative Labs dealer, call 1-800-998-5227.

Sound BLASTER™ CREATIVE™
CREATIVE LABS, INC.

Microsoft Windows Compatible
MPC2 Multimedia PC

*SRP $399.95

© Copyright 1993 Creative Technology Ltd. Creative Double-Speed Technology, Creative OmniCD, Sound Blaster and the Sound Blaster and Creative logos are trademarks of Creative Technology Ltd. All other trademarks are the property of their respective owners. U.S. inquiries: Creative Labs 1-800-998-5227 or 1-408-428-6600. **International inquiries: Creative Technology Ltd., Singapore, TEL 65-773-0233 FAX 65-773-0353.**

Circle Reader Service Number 125

EDITORIAL LICENSE

Clifton Karnes

COMPUTE's been a pioneer in multimedia since day one. In fact, way back in July 1991, we started the first monthly computer magazine column we know of devoted to multimedia. Since then we've regularly covered multimedia in features, Test Labs, and reviews.

This month marks another milestone in our multimedia coverage. Starting with this issue, we're including a special section called Multimedia PC in each issue. In this section, you'll find "Fast Forward," a column written by COMPUTE's multimedia expert, David English; a feature; a new-products section; and an in-depth review we're calling "Multimedia Spotlight."

Multimedia and networking are in our future and yours.

Each Multimedia PC section will kick off with the "Fast Forward" column, which will take a hard look at what's new and what's just around the corner in multimedia technology. If you want to get the scoop on the leading edge, look here. In this issue, David's column focuses on the new MPC Level 2 specification and why it's the way to go. Don't buy a new multimedia PC or upgrade kit until you've read about the latest standard.

The multimedia feature will cover everything from hands-on help to buyer's guides. This issue's feature, "Open Windows to Sound," tells you what to look for in a sound card and speakers, with details about the best equipment, including both MIDI and high-end studio applications.

"New Multimedia Products" will cover the latest available hardware and software—the stuff you'll probably have read about a few months before in "Fast Forward." For details about what's new and noteworthy, turn here.

The last article in our multimedia section will be "Multimedia Spotlight," a review of the coolest MPC product we've seen for the month. The first "Spotlight" takes a look at PC Karaoke. If you sing "New York, New York" in the shower but dream of bigger things, your multimedia PC may help you.

This is just the beginning. We have lots of exciting things planned. Taking just one peek ahead, if there's a multimedia aficionado on your gift list this year, don't miss our next issue's feature on great multimedia gift ideas.

Multimedia isn't the only new thing happening this month at COMPUTE. Last month, I talked a little about COMPUTE going live on America Online. I couldn't say too much about our forum then because lots of details were still up in the air; now, everything's finalized, working, and pretty nifty.

Before talking about COMPUTE's AOL edition, it might be worthwhile to touch a little on COMPUTE's history. As many of you know, COMPUTE's been publishing for 15 years, giving home and business PC users all the latest information about hardware, as well as productivity, education, and entertainment software, in a form that's easy to understand and easy to use.

Our online edition of COMPUTE will offer some of the best from our regular edition, including hints and tips about everything from DOS batch files to database programming, the latest scoops on hot Windows apps and cool multimedia titles, and in-depth reviews and head-to-head Test Labs.

You can get to the COMPUTE forum on AOL with the keyword *COMPUTE*. When you arrive, you'll see the COMPUTE logo in a window with several buttons and a list box filled with places to visit. The two big buttons in the upper right are for what's new in the forum. These buttons will change every few days, so check them out regularly. Other buttons let you move quickly to popular areas in the forum: Message Boards, Tips & Tools, Software, and Text Search.

The list box contains the topics for our online articles: Windows Workshop, News & Notes, Windows Workshop, Multimedia PC, Games, Getting Started With, Test Lab, COMPUTE Ordering, and Computer Lingo.

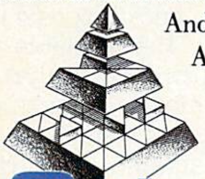
Perhaps the most important section in the COMPUTE forum hosts our message boards. We want COMPUTE Online to be more that just an online edition of the magazine. We want it to be an interactive magazine, too. With the message boards, you'll be able to talk with COMPUTE's editors. You can ask us and your fellow online travelers questions directly, and generally make yourself more a part of the magazine. We're looking forward to more contact with you; I hope you'll take advantage of this opportunity to let us hear what's on your mind. So link up, log on, and leave us a note. ❐

Mission critical code starts here.

IBM Programming Systems introduces C Set++,™ the most complete application development package you can buy for OS/2.® Its 32-bit C/C++ compiler lets you unleash all the power of OS/2 — so you can create the most advanced, high-performance applications.

It has an extraordinary code optimizer with a full set of options. Even a switch to optimize for the new Pentium™ processor. Plus a full set of class libraries, including application frameworks for PM, container classes and classes for multitasking, streams and more.

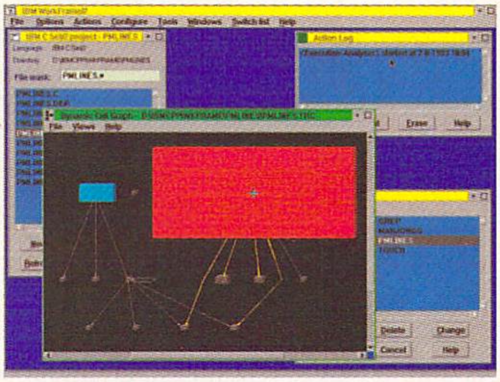
There's also a full complement of other helpful features. Such as an interactive source level debugger.



C Set ++

And the unique Execution Trace Analyzer traces the execution of a program, then graphically displays diagrams of the analysis. Plus a class library browser that shows class library relationships.

What's more, you get Workframe/2,™ a language-independent tool that lets you customize your own environment. It's adaptable and flexible — you can use any 16 and 32-bit DOS, Windows™ and OS/2 tools.



C Set ++ Technical Features	
Standards	ANSI C X3.159-1989
	NIST validated
	ANSI C++ X3J16 (Full ARM)
	ISO 9899:1990
Optimization	Global
	Inter-module
	Function inlining
	Instruction scheduling

To order C Set++,
contact your nearest dealer or call
1-800-342-6672 (USA) or
1-800-465-7999 ext. 460 (Canada).
Clearly, there's only one place to start. C Set++.

IBM®

IBM and OS/2 are registered trademarks and C Set++ and Workframe/2 are trademarks of International Business Machines Corporation. Pentium is a trademark of Intel Corporation. Windows is a trademark of Microsoft Corp. © 1993 IBM Corp.

BUILT-IN WINDOW

We all know what a head is for. It's a great hatrack. You can break down a door with it. It even makes a fair percussion instrument. Oh, and it comes with a brain inside. You can use your brain to make work simpler, or you can ignore it and use your head for a hatrack. It's the same way with Windows. Too many of us are using Windows as if it were only a brainless task switcher, good for keeping those mysterious Windows programs under some kind of control, but otherwise a memory-wasting nuisance.

Windows has so much more to offer than a shell and a task switcher, yet many of us never venture into that no man's land of advanced Windows features. Fear not! If you step off the beaten path, you'll discover that Windows has features that will make your work easier and more intuitive, your output more attractive, and your computer an even abler assistant than it was before.

This article will talk about TrueType, the Recorder, the Clipboard, and OLE and DDE. You'll find out what they are and how to use them.

Remember, though, that not all Windows applications use all of these features. Therefore, before trying any of the options discussed here, you should check your applications' documentation to make sure they support these advanced Windows features. The examples we'll use involve Windows Paintbrush and Windows Write, since everyone who has Windows has these applications. Microsoft was kind enough to make sure that both of these so-called accessories take full advantage of the advanced features.

Font of Wisdom

TrueType was developed in a cooperative effort between Microsoft and Apple Computer to establish a font technology that could be used across computer platforms (read *that could be used on the Mac and the PC*) and that wasn't dependent on PostScript, which is a product of Adobe. TrueType is part of a larger page description language called TrueImage, which is available in place of the PostScript language on many "PostScript-compatible" printers. The advantage of TrueType fonts over PostScript fonts for the casual user is that, without additional software (such as FaceLift or Adobe Type Manager), TrueType fonts can be printed on any printer that has a Windows driver, and they appear onscreen pretty much as they will appear on the page. This provides high-quality outline fonts for use with PCL laser printers (also known as Hewlett-Packard–compatible printers) as well as ink-jet printers, thermal transfer printers, and even dot-matrix printers and fax machines.

There's nothing new to learn about using TrueType fonts. All you have to do is make sure they're installed and active under Windows. To do this, open the Main program group, double-click on Control Panel, and then double-click on Fonts. A dialog box will open up, and one of the buttons on the right side of the box should be marked TrueType. Click on that button, and you'll see a dialog box with two options: Enable TrueType Fonts and Show Only TrueType Fonts in Applications. Make sure the check box next to Enable TrueType Fonts is checked. The available fonts will appear in the font lists of programs that support TrueType (which includes most programs released since Windows 3.1 appeared on the market).

The TrueType fonts are attractive, well designed, and easy to use, but their greatest effect has been in the area of marketing. Before TrueType, purchasing a font meant laying out major bucks. A single font could cost $100 or more, and people who found good-looking fonts for as little as $20 or $30 considered themselves lucky.

Since the appearance of TrueType, the cost of fonts has diminished to the point that you can purchase professionally designed fonts for as little as $2 apiece in packages. Many drawing programs are packed with dozens of free fonts as a premium (CorelDRAW! 4.0 alone was shipped with 750 TrueType fonts in its CD-ROM version), and you can find dozens of excellent fonts on bulletin boards and online services for the cost of downloading them (CorelDRAW! is the major reason for this; its font design capabilities are awesome).

Bear in mind that TrueType has not yet made its way into professional circles. Many typesetters require Adobe PostScript fonts and cannot yet use TrueType fonts. If you're preparing something for typesetting, be sure to find out from your typesetter what kinds of fonts to use before you start laying out your publication. Otherwise, you might be in for an unpleasant surprise—and a lot of extra work.

By Robert Bixby

VS POWER TOOLS

An alphabet soup of extraordinary features comes packaged with Windows.

Instant Replay

Windows' Recorder is a much-maligned macro facility. Its shortcomings were among the main reasons for Hewlett-Packard's NewWave product, which features prominent among its advantages a fully scripted macro language. The Recorder may be limited, but within its small domain, it's very powerful.

The key to using the Recorder with the mouse is that you must settle on specific positions for all the objects on your Windows desktop. The reason for this is that the Recorder understands only keypresses, mouse clicks, and mickeys. What's a mickey? It's a unit of measure for mouse movement across your desktop. The implications of this are that when you record a mouse click at a given location on the desktop, the Recorder script will remember only the click and the location of the mouse pointer. If you move the icon that was in that position when you clicked or place another icon on top of it, the Recorder macro will be useless (and potentially dangerous).

Therefore, the first step in successful Recorder use is either to construct a comfortable arrangement of items on your desktop and keep the items in that arrangement as long as you use your library of Recorder macros or to record only keypresses (this is one of the options as you begin recording a macro). Veteran Recorder users recommend recording keypresses because they're completely independent of arrangement of objects on the screen and they're much less ambiguous.

To use the Recorder, double-click on its icon in the Accessories program group. The Recorder window will appear. Pull down the Macro menu and select Record. The options in this dialog box allow you to record mouse movement and clicks, ignore mouse (record keyboard entry only), or to record everything (mouse and keyboard). You can select a key combination to assign the macro to, such as Ctrl-Z. You can tell the macro to play fast or at the same speed it was recorded, and you can make the mouse movements relative to the full screen or the window.

You can't edit a macro, but you can call another macro within a macro (to do this, you must have Enable Shortcut Keys checked in the Record dialog box; to run another macro within a macro, just press the shortcut key for that macro while recording a macro).

Let's try recording a macro. The Recorder works with any application, so let's use Write for the example.

Start up Write.

Bring the Program Manager to the foreground and double-click on the Recorder icon in the Accessories program group.

Pull down the Macro menu and select Record.

In the resulting dialog box, type *z* in the Shortcut Key text box and select Everything in the Record Mouse list box. Make sure that Playback To is set to Same Application, that Playback Speed is set to Fast, that the Continuous Loop check box is not checked, and that the Enable Shortcut Keys check box is checked.

Click on Start to begin recording. The Recorder will be minimized.

Type some text in Write. A good use for a macro is to record your letterhead information so you don't have to type it out each time you write a letter. Enter your name, address, and telephone number; drag through all the text; and press Alt-P, C to center it on the page. That's enough for your first macro. Let's turn off the Recorder.

Double-click on the minimized Recorder icon. Macro recording will be suspended, and a dialog box will open, giving you the options of Save Macro, Cancel Recording, and Resume Recording. If you want, you can now take other actions that will not be recorded and then resume recording at a later time by just selecting Resume Recording. However, at this time we will save the macro for later use.

Click on Save Macro. The macro will not be saved to its own file but rather to a collection of macros. You can have as many collections of macros as you want, and each collection of macros can contain dozens of individual commands.

To save your current collection of recorded macros, pull down the File menu in the Recorder dialog box and select Save. The familiar Save dialog box will open, and you can save your macro collection with any name you choose, although the default extension for recorded macro collections is REC.

You can't edit a recorded macro (you have to rerecord the macro from beginning to end), but you can change the properties of a macro by clicking on the macro in the Recorder dialog box, pulling down the Macro menu, and selecting Properties.

Since you can't edit macros, a good strategy is to atomize them. Break a single task into several short tasks, giving each of these tasks its own shortcut key combination. Then, when it comes time to put all the short macros together into a larger macro, record a macro in which all you do is press the shortcut key combinations for the shorter macros. That way, if some aspect of your macro changes, you need rerecord only the one or two parts of your macro that have changed, not the whole thing. Recording a long, detailed macro can be an exercise in frustration. Each time you make some small mistake, you'll have to start over again. By breaking your macro down, you can deal with it in manageable chunks.

Cutting and Pasting

The Clipboard is hardly an advanced feature. It's been around since the very beginning in Windows, and most people have used it, whether they were aware of it or not. If you cut or copy something from a document and then paste it back into that or another document, you've used the Clipboard. But there are more ways to use it. For example, did you know that Windows has a built-in screen capture facility? Anytime you have something on the screen that you want to capture for posterity, all you have to do is press your Print Screen key. The entire screen will instantly be placed on the Clipboard. From there, you can save the image to disk, or you can paste it into any application that can handle a bitmap image. The only drawback of saving the Clipboard image is that you can save it only in CLP format—the native format of the Clipboard. There are utilities (FreezeFrame by Delta Point, for example) that can convert the Clipboard file to a BMP or other bitmapped format. If you don't want to save the entire screen, press Alt–Print Screen to save an image of the active window to the Clipboard.

If you've captured a screen image to the Clipboard, you can paste it into Windows Paintbrush. Once the image is in Paintbrush, you can save it as a BMP or PCX graphic. You may have tried pasting a full-screen image into Paintbrush and been frustrated because pasting the full-screen image results in a truncated image only as large as the window in Paintbrush. There's a technique for getting the whole image in (and thanks to Clifton Karnes's *101 Essential Windows Tips* for this solution): Zoom out before pasting. That way, you can paste the whole image into the reduced-size screen. Pull down the View menu within Paintbrush and select Zoom Out. Pull down the Edit menu and select Paste. The Paintbrush window will appear to be filled with a grid. Pull down the Edit menu and select Paste again. The full-screen image will appear. Pull down the View menu and select Zoom In. You can scroll all over the screen and edit it; then you can save the result to disk as a BMP or PCX file.

If you want to be really hip, capture

The Next Generation Publisher...

SPECIAL OFFER
$59.95
BUY DIRECT

PagePlus 2.0 for Windows

PagePlus 2.0 is packed with hot new features that make it more powerful, yet easier to use, for all your publications. We've listened to our users, now PagePlus 2.0 can do just about anything you want – and then some. Check out this ad – *it's designed and produced using PagePlus 2.0 with full color separated output*. Now it's so easy for everyone to look good in print, and with our 60-day Money-Back Guarantee you've nothing to lose.

60 DAY
MONEY-BACK GUARANTEE

NEW! **Full Color Publishing** including image colorize, Pantone® Color License and Full Process Color Separations. A major industry first!

NEW! **Text Frames** with unique column blinds give you the ultimate in text flow control.

NEW! **Styles and Templates** with AutoApply for great looking pages in a hurry.

	Serif PagePlus 2.0	Aldus PageMaker 5.0	Microsoft Publisher 1.0
Auto Text Flow	✪	✪	✪
Kerning	✪	✪	✪
Import Pictures	✪	✪	✪
Drawing Tools	✪	✪	✪
Rulers, Guides	✪	✪	✪
Multiple Zoom Levels	✪	✪	✪
Publishing Templates	✪	✪	✪
Irregular Text Wrap	✪	✪	
Styles	✪	✪	
Pantone® Colors	✪	✪	
Process Color Seps.	✪	✪	
Free Rotation	✪	✪	
Free & Frame Text	✪		
Export as Picture	✪		
ChangeBar	✪		

NEW! **Export as Picture** from PagePlus 2.0 to jazz up your WP document or spreadsheet.

NEW! **Free Text** lets you drag and drop text anywhere on the page or pasteboard.

NEW! **Free Rotation** of text and graphics. Wow!

NEW! **ChangeBar** technology for dynamic on-screen changes. It couldn't be easier.

NEW! **Even More Goodies** like movable rulers, hint line, CleanUp, Status Editor, OLE, TrueType...

It's a Winner!

PagePlus 1.2 is the Winner of the Windows User Award for "Best desktop publishing software" – the losers included MS Publisher, Aldus PageMaker and Ventura Publisher. Now, the best just got better – PagePlus 2.0 keeps Serif out in front. It's a Winner!

WINDOWS USER AWARD
#1
BEST DESKTOP PUBLISHER

New Publishing Packs...

To add extra variety, we've intoduced three great new Publishing Packs. At just **$19.95** they're the lowest priced Windows add-ons. *For all your applications – not just PagePlus!*

NEW! **TypePlus 2.0** for eye catching text effects. Type on an arc, circle, button or bezier curve.

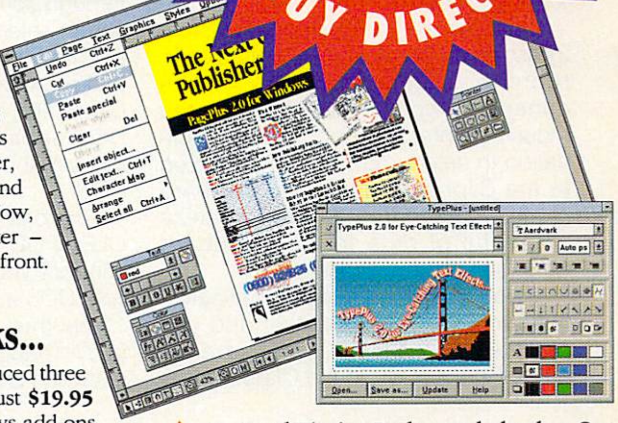
NEW! **ArtPack** a professionally drawn collection of over 500 color images for superb results.

NEW! **FontPack** over 100 (yes, 100) TrueType classic and decorative typefaces!

Now try PagePlus 2.0 for just $59.95 in our Special Offer!

We're launching PagePlus 2.0 at just **$59.95** and our Publishing Packs at only **$19.95** each. It's only possible because you're buying Direct from the publisher – Serif gives you high-end products at entry-level prices. Better still, get everything in our BumperPack for **$99.95** and save another $20. (For education and larger groups you can get the BumperPack for *10 Users* for $249). Order now and find out for yourself why PagePlus 2.0 really is the Next Generation Publisher.

So call us Direct, or fax/mail the coupon today!



- An Award-Winning Product, and already a Best Seller with over 50,000 enthusiastic users
- The Best Value *and* Lowest Price - why pay more?
- FREE Product Support and Low-Cost Upgrades
- A 60-Day, No-Quibble, Money-Back Guarantee
- Great Software, Direct from the publisher

YES! Please rush me...

- ☐ PagePlus 2.0 @ $59.95
- ☐ TypePlus 2.0 @ $19.95
- ☐ ArtPack @ $19.95
- ☐ FontPack @ $19.95
- ☐ BumperPack @ $99.95
- ☐ 10-User Pack @ $249

I enclose a total* of $ ....
*Add $7 for S&H ($12 International).

Credit Card No...
Exp. Date...
Signature ....
Name ....
Company ....
Address ....
City...
State .... Zip ....
Telephone (................) ....

Please return to:
Serif, Inc.
PO Box 803
Nashua NH 03061
Or Fax Toll-Free to: 800-869-8909

CPT-11

24-HOUR TOLL-FREE HOTLINE
800-697-3743

24-HOUR FAX ORDER LINE
800-869-8909

Great Software, Direct

SERIF

Serif, Inc. • PO Box 803 Nashua NH 03061 • Tel: (603) 889-8650 Fax: (603) 889-1127
Serif Europe • PO Box 15 Nottingham NG7 2DA England • Tel: +44 602 421502 Fax: +44 602 701022

NOTE: Please add $7 S&H ($12 international). Checks and Money Orders to SERIF, VISA, MasterCard, and American Express. Official POs from Education, Government and Fortune 1000. BumperPack is PagePlus and all Publishing Packs. 10-User Pack is BumperPack with Site License for 10 users in one location. You need Windows 3.1 or higher. All Serif product names are trademarks of Serif, Inc. All other trademarks acknowledged. **Like all Serif marketing materials, this ad was designed and color separated using PagePlus.**

Circle Reader Service Number 120

a screen that's typical of your Windows working desktop, paste it into Paintbrush, save it as a BMP file, and then use that file as your Windows wallpaper. That way, you'll look busy even when you don't have a single window open on your screen.

To see what's on the Clipboard and to save or load an image, you need to use the Clipboard Viewer, which is one of the applications in the Main program group. Double-click on the Clipboard Viewer icon, and you'll see the current contents of the Clipboard. Just for fun, when the Clipboard Viewer is visible, press Print Screen and then Alt–Print Screen to see what happens to the contents of the Clipboard.

You can use the Clipboard to store information from DOS applications running under Windows. In 386 enhanced mode, you can drag the mouse pointer through a DOS application to select data to be transferred to the Clipboard. In real or standard mode, you can transfer only an entire screenful of data to the Clipboard from the DOS application.

If you're running a DOS application full screen under Windows and you press Alt–Print Screen, you'll save the entire DOS screen to the Clipboard as text. This can come in very handy.

If you're running the DOS application in a window (press Alt–space bar to switch between running the application full screen and running the application in a window), you'll see a Control menu in the upper left corner of the window. This is similar to the Control menu in Windows applications, but it has a couple of enhancements. First, it allows you to select the size of the type in the window (and therefore the size of the window itself) under Fonts. Second, it gives you an Edit option.

Pull down the Control menu and select Edit; then select Mark from the resulting submenu. Drag the mouse through some text in the DOS application to select it. Then press Enter, and the data you've selected will be copied to the Clipboard. If there is data in the Clipboard, you can paste it into your DOS application. This facility brings many of the advantages of Windows to DOS.

The only thing you can't do is make OLE or DDE links with a DOS application (not yet, anyway) or cut data from your DOS application.

Another use for the Clipboard, as you'll read shortly, is as a bridge to establish DDE and OLE links.

Linking Documents

OLE is the latest linking option in Windows. The acronym (usually pronounced like the Spanish interjection *olé* but sometimes spelled out, *O-L-E*) stands for *Object Linking and Embedding*. OLE goes beyond its precursors, DDE and pasting from the Clipboard, in that instead of simply pasting a value in a document, it pastes the entire application in the document. That's a lot to comprehend, so take a moment to consider the possibility of having all of Quattro Pro as part of an Ami Pro document, or all of Paintbrush as part of a Write document. Now that you've considered it, let's do it.

Start up Paintbrush and Write. In Paintbrush, draw an image. It doesn't have to be anything fancy—just a rectangle or two of different colors would be fine.

Save your drawing (saving the file containing the linked object is crucial to the process).

Drag a selection rectangle that encloses the drawing you just created. Pull down the Edit menu in Paintbrush and select Copy to place a copy of the image on the Clipboard.

Click on Write. Pull down the Edit menu and select Paste Special and

then Paintbrush Picture Object. The contents of the Clipboard will be pasted into your Write document. But there's more.

Close down Paintbrush so that all you have running is Write with the linked object in it.

Double-click on the linked object. If all goes well, Paintbrush should have started up, with the linked object in its window, ready for editing.

How could you use a property like that? Imagine that you're designing a letterhead. Part of the design is the logo for your company. The logo committee is driving you nuts by changing the logo constantly. By having the logo and the drawing program inside the letterhead itself, you can save time when changes come through by making them right in the document itself instead of making them in some separate document and then going through the steps to update the changes in the final document.

DDE is an earlier version of OLE. It's not as well supported as it used to be and may be fading from use, but enough software still uses DDE that it's worth mentioning.

Although it sounds like the latest insecticide or mind-altering chemical, DDE was actually the first serious advance associated with Windows. It appeared with Windows/286 and Windows/386, and it allowed specially designed Windows applications to communicate with each other.

DDE stands for *Dynamic Data Exchange*. When it's used, it allows you to move information from one application into a document created by another application. Sounds like cutting and pasting, doesn't it? Well, it goes a step beyond that. The information pasted into the new document is permanently linked to its origins. When data in the original application changes, the document into which it has been pasted is also updated. Is that clear? Maybe an example will help.

Suppose you're preparing a 50-page annual report. Deadlines are tight, and the data in the spreadsheet keeps changing as information is being fed in from your many branch offices around the world. How will you know that the final information is in place when the document is sent to the typesetters? If you guess DDE, give yourself a star. When you link the bottom line in your spreadsheet to the gross earnings line in your text document, you'll know that when the final figures are in place, they'll also be completely up-to-date in your annual report.

Let's use DDE to see how it works. Once again, we'll use Windows Paintbrush and Windows Write to demonstrate the principles, but you could use most DDE-compliant software to create an example of your own.

Start up Windows Paintbrush. Draw a circle of one color and then a rectangle of another color. Save the painting to disk.

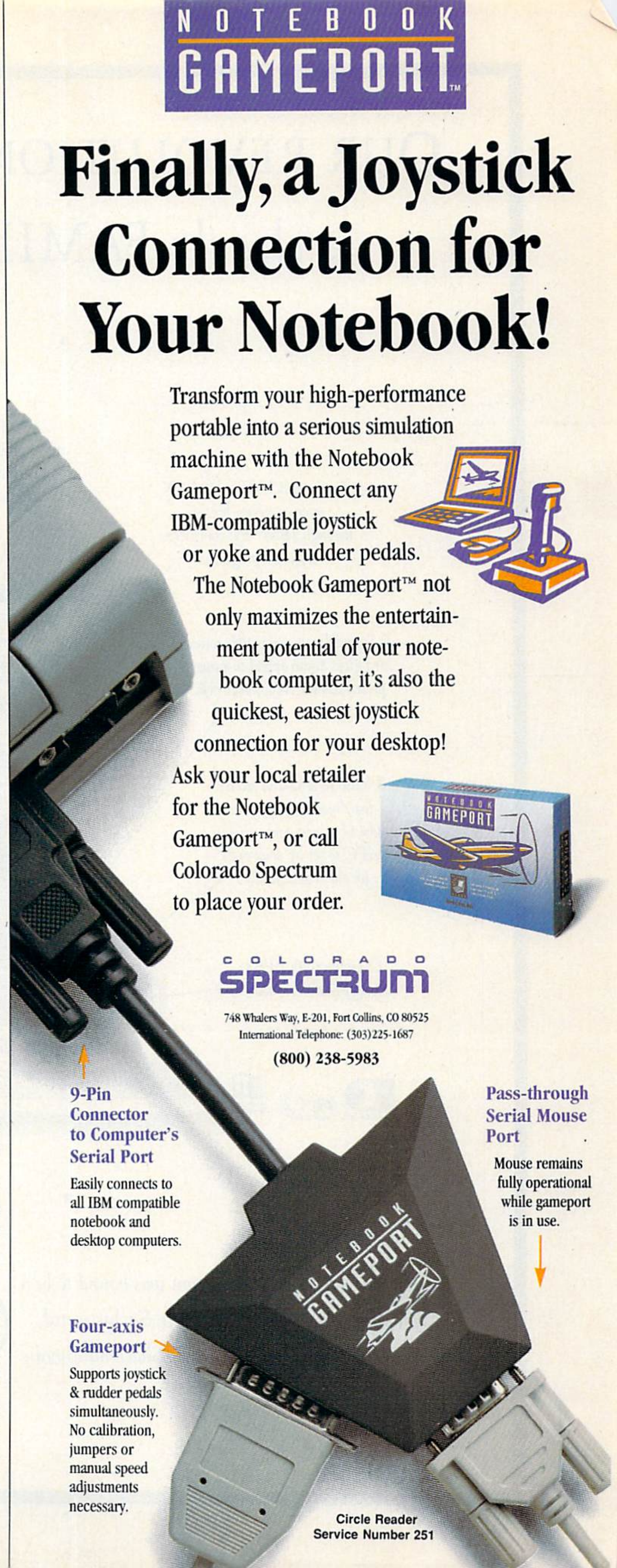
Drag a selection rectangle that encloses the entire drawing and select Copy from the File menu. The drawing is now on the Clipboard.

Start up Windows Write. Pull down the Edit menu and select Paste Link. Now when there are changes in the graphic in Paintbrush, they will be instantly reflected in the document in Write.

Use Your Head

Now that you know a little about what can happen in the background, you should never mistake Windows for a mere task switcher again. Windows is capable of even more now—with its multimedia add-ons that can make use of animation and sound.

Windows has become a deep enough product that it will repay you handsomely for any time you spend learning how the pieces fit together. Remember: Use your head for something besides a hatrack—and put Windows to work every chance you get. ❑



NOTEBOOK GAMEPORT™

Finally, a Joystick Connection for Your Notebook!

Transform your high-performance portable into a serious simulation machine with the Notebook Gameport™. Connect any IBM-compatible joystick or yoke and rudder pedals.

The Notebook Gameport™ not only maximizes the entertainment potential of your notebook computer, it's also the quickest, easiest joystick connection for your desktop!

Ask your local retailer for the Notebook Gameport™, or call Colorado Spectrum to place your order.

COLORADO SPECTRUM
748 Whalers Way, E-201, Fort Collins, CO 80525
International Telephone: (303)225-1687
(800) 238-5983

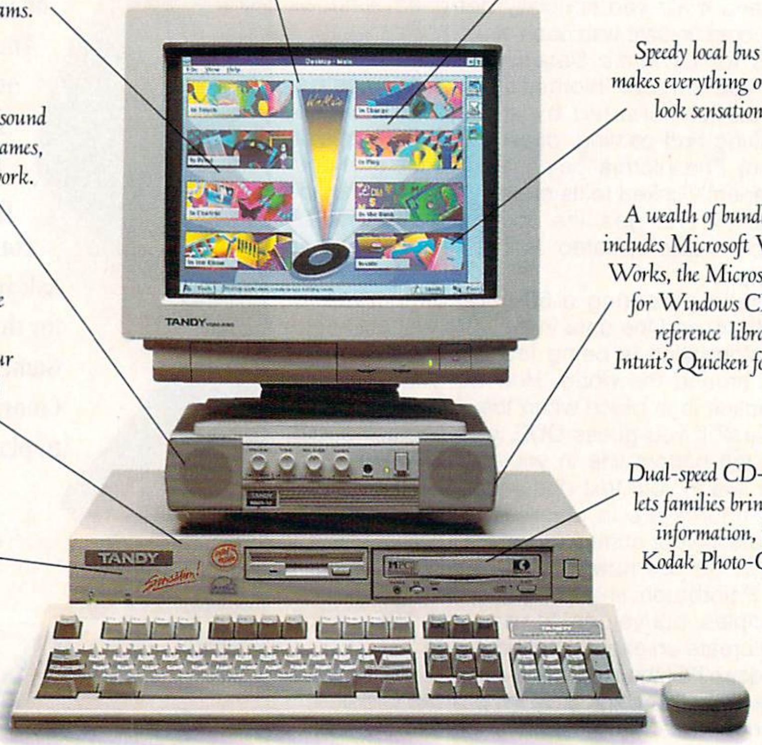
9-Pin Connector to Computer's Serial Port
Easily connects to all IBM compatible notebook and desktop computers.

Pass-through Serial Mouse Port
Mouse remains fully operational while gameport is in use.

Four-axis Gameport
Supports joystick & rudder pedals simultaneously. No calibration, jumpers or manual speed adjustments necessary.

Circle Reader Service Number 251

OUR REVOLUTIONARY *new* COMPUTER *is clearly* FAMILY COMPATIBLE.



An Intel 33 MHz 486 SX microprocessor breezes through IBM® PC compatible software programs.

212 MB hard drive and 4 MB RAM let you run sophisticated Windows-based software.

Exclusive WinMate software makes using Windows easy and helps organize households and home businesses.

Speedy local bus video makes everything on-screen look sensational.

A Soundblaster compatible sound card gives audio appeal to games, presentations, even homework.

A wealth of bundled software includes Microsoft Windows 3.1, Works, the Microsoft Bookshelf for Windows CD-ROM reference library and Intuit's Quicken for Windows.

A built-in send and receive fax/modem helps you conduct business and use your MPC to set up voice mail for the whole family.

Dual-speed CD-ROM drive lets families bring interactive information, including Kodak Photo-CDs, to life.

Complies with EPA's "Energy Star™" standards.

From the start, the Tandy Sensation was bound to be a family favorite. It's practical, but fun. Sophisticated, but easy to use. No wonder this Radio Shack multimedia PC has already won the hearts of so many experts. Now, though, it's your seal of approval we're after. Because we designed the Sensation with families

The Intel Inside logo is a registered trademark of Intel Corporation. IBM is a registered trademark of IBM Corp.

And APPARENTLY, CRITIC COMPATIBLE, TOO.

"The Tandy Sensation is a rich collection of well-integrated programs and hardware in a clean, handsome package."

-Jim Canning,
Michael McCarthy
InfoWorld

"It's a dandy multimedia computer. The Sensation is worth serious consideration if you're shopping for the multimedia experience."

-Larry Blasko
AP

"Tandy's Sensation is aptly named. I urge anyone looking for a good all-around MPC system to test-drive the Sensation."

-Greg Loveria
BYTE

"The Sensation is not only easy to use, but quite a multimedia Swiss Army knife."

-Selby Bateman
CD-ROM Today

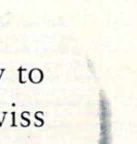
"Tandy's Sensation is a state-of-the-art home computer that works well and offers a lot for the money."

-Howard Blumenthal
Hardware Review, United Feature Syndicate

"The Sensation is an excellent machine that does a lot and does all of it well."

–Eddie Huffman
Compute

like yours in mind. Its multimedia capabilities and user-friendly technology mean everyone in your home can put it to use. So why not put it



to the test? Experience the Sensation firsthand at your neighborhood Radio Shack. Chances are, you'll find it's compatible with you, too.

Radio Shack®

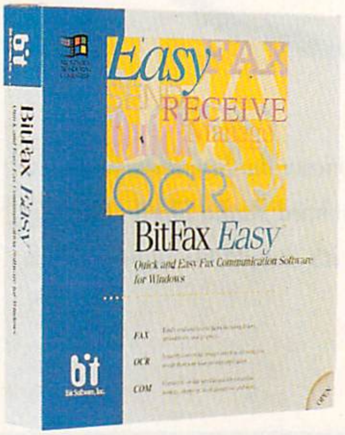
Circle Reader Service Number 180

TEST LAB

Edited by Mike Hudnall
Reviews by Richard C. Leinecker

Does your present computer setup allow you to be as productive as you can be? With each new generation of hardware and software, this is a question you've got to ask if you want to maintain a competitive edge. The arrival of stand-alone fax machines provided a tremendous productivity boost. Then computer fax cards entered the work scene, offering ease of use, even more convenience, and even greater productivity benefits. Now these cards are faster, less expensive, and more capable than ever; and a number of companies are ready to take advantage of this market by offering fax packages, many of which have OCR capabilities.

The benefits of computer faxing were clear to me from the first day I used one of these packages. For months I wrote messages in Microsoft Word, printed them on my LaserJet, faxed them from the machine, and then threw them in the garbage. After my garbage can filled up enough times, after my LaserJet needed a new toner cartridge, and after I forgot to resend enough faxes after busy signals, I looked for a better way. The complete solution to all of these problems was my fax board and fax software. This month's Test Lab covers ten of the best Windows-based fax software packages on the market.



Using this technology begins the transition to a paperless office. Instead of printing to my LaserJet from Word, I now print to the fax board. I select the fax board from the Windows printer setup. Then, every time I print, the document routes to the fax board. No more full garbage cans and depleted toner cartridges from faxing!

Getting busy fax machines doesn't bother me. I simply schedule outgoing faxes and let the software worry about trying again later. No more irate phone calls asking where the fax is!

These fax packages do a lot more than I need. But some of you are probably looking for just such capabilities. You can set up software to send documents on a regular basis. Let's say, for example, that you have a sales staff that needs current inventory and pricing information daily. Every day at 5:00 a.m., your fax software can dial them all with the correct information based on a file on your hard drive.

If you have several people onsite who all get faxes, you'll find this feature helpful: Fax software gives you the ability to set up separate incoming boxes. This makes it possible for each person to print out his or her own faxes. That's good because you don't have to worry about a fax's going to the wrong desk and lying there for weeks. Another advantage is the security that's provided to each person. Sensitive faxes aren't open to unwanted eyes.

If you do have something on paper that you need to fax, you'll need a scanner, too. Most of the packages easily import from scanners. Here again, the fax-card-and-software solution is better than the old way. Once you have a document scanned in, you can load it into your favorite paint program or work with it using the fax software's built-in graphics tools. If necessary, you can use optical character recognition to convert a fax to editable text.

I still have my dedicated fax machine. For the types of incoming faxes I get, it's ideal. But for my outgoing faxes, you won't catch me using it. Once you take a close look at the packages in this month's Test Lab, you may decide that they can solve many of your communication problems, too.

RICHARD C. LEINECKER

BITFAX EASY

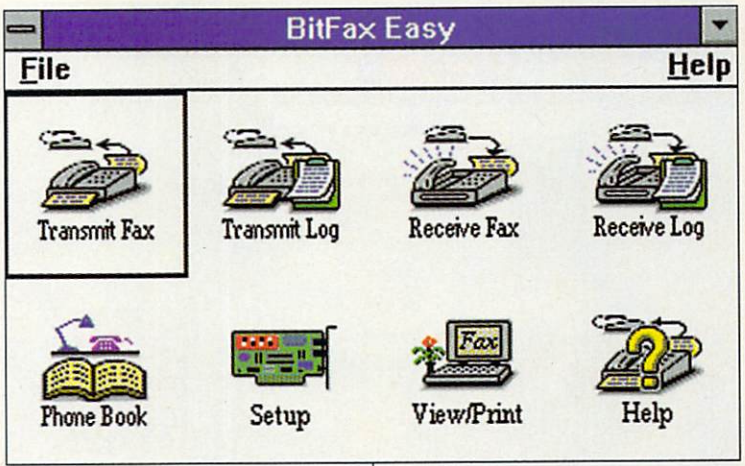
BitFax Easy—$89

BIT SOFTWARE
47987 Fremont Blvd.
Fremont, CA 94538
(510) 490-2928

Many of you grew up on BitCom, the terminal program that at one time seemed to come with most of the modems sold. The same folks who developed BitCom applied their telecommunications skills to the next logical step—fax software. If you're accustomed to BitCom, you might learn to use BitFax without much difficulty. It occupies a middle point between older DOS-based software and hardcore Windows technology.

I know people who won't touch Windows software unless it follows every standard Windows interface technique in existence. I also know people who're used to DOS software and need the chance to ease into Windows. BitFax bridges the two extremes. It doesn't completely follow the Windows interface standards, using a smaller-than-usual screen and 2-D, rather than 3-D, buttons, for example. On the other hand, the program doesn't stay strictly with old DOS-style techniques. This is neither good nor bad; just be sure that this is what you want before you consider BitFax.

This version of BitFax includes an advanced OCR technology called Caere AnyFax technology. In the three programs I tested



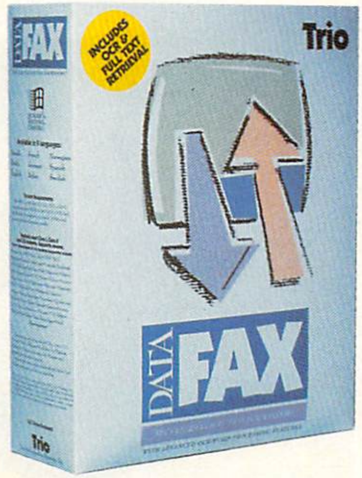
that use it, this OCR technology produced admirable results. The scores for these programs were about as good as the scores for any others. In my benchmark test, BitFax scored 77 percent. That's outstanding, especially considering that the benchmark test has some built-in procedures that lower the scores. You won't have any trouble using the files it saves as long as you're willing to spend a few minutes editing the few characters that go awry.

BitFax's fax viewer didn't have many features, but of the viewers covered in this roundup, this one was probably the easiest to use. Buttons and pull-down menus let you easily rotate, scale, and page through the fax document. For most people, this is enough—and the viewer is truly easy to use.

With most of the fax packages, you have to identify the card you're using. With BitFax, I didn't have to. Some of the features I looked for were missing from this package. I couldn't find a way for incoming faxes to automatically print, nor could I find any scanner support. Also, there didn't appear to be any way to import and export phone book lists—a capability you'd really miss if you already have your phone numbers and addresses in electronic format. However, even these omissions don't prevent BitFax from being a good choice for a number of people. And this latest version of the software installs more easily than the previous version, has improved documentation, and now comes with BitCom, a terminal program.

If you want software that sends faxes, receives faxes, and does OCR conversion, and if you don't need your fax software to do anything else, this could be a good choice for you. Particularly if you still feel more comfortable with DOS-based software, give BitFax a look.

Circle Reader Service Number 371



DATAFAX 4.01

This is no ordinary fax software. The designers at Trio made sure DataFAX went beyond other fax software by including extras that most people don't even think of. Besides working on my standalone system, it's network ready. Cover pages can be converted to 28 different languages. A slightly different fax protocol needed when communicating with German fax machines can be turned on. And the OCR conversion process exports to a number of popular word processor formats.

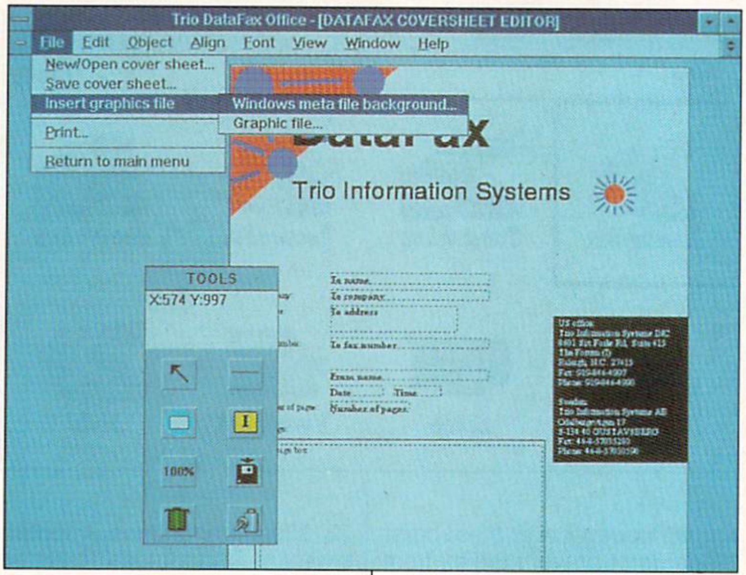
DataFAX 4.01—$129

TRIO INFORMATION SYSTEMS
8601 Six Forks Rd., Ste. 615
Raleigh, NC 27615
(800) 880-4400
(919) 846-4990

All of the features you'd expect are there. You get background sending and receiving, OCR conversion, graphical editing tools, and scheduled transmissions. They're all admirably implemented; just click on a button or menu selection. DataFAX uses more buttons with icons than the other fax software. Although it took me a bit longer to learn what each one represented, once I did, the interface was very easy to use.

In examining DataFAX, I received the impression that the designers didn't look at other fax software during the design process. They seemed to start from scratch as they created their idea of the perfect fax software.

During the installation, as DataFAX copies each file to the hard drive, a message tells you exactly what the file does. I've never seen an install program do that, but it sure was a nice change. Also, that the software which runs on my system is network ready distinguishes this product from other fax packages. Most companies charge plenty for their network versions. The international sup-


Trio DataFax Office - [DATAFAX COVERSHEET EDITOR]
File
Edit
Object
Align
Font
View
Window
Help
New/Open cover sheet...
Save cover sheet...
Insert graphics file
Windows meta file background...
Graphic file...
Print...
Return to main menu
DataFax
Trio Information Systems
TOOLS
X:574 Y:997
100%
To name
To company
To address
To fax number
From name
Date
Time
Number of pages

port, something else not found in the other fax software, may find favor with you if you do much overseas faxing. Sending a cover sheet to Paris with French titles is pretty impressive.

Here's another feature you might like. DataFAX has the regular front-end program like all the others, but there's a special smaller version called Captive that can be loaded and always stays on the screen as a small window, ready to be called upon when needed. Clicking on the button activates it and gives you several other choices that let you do quick operations such as sending a fax note or capturing part of the screen to fax. You can even drag files from the File Manager to it, and it will send them as faxes!

The OCR conversion of faxes to text worked adequately. The nicest part was the ability to save the files in ASCII, Excel, Word, Lotus, WordPerfect, and Ami Pro formats.

Changing program configuration is easy. Menu entries take you right to dialog boxes that let you change any part of the program's setup. That's important because it can be hard to match the setup to your fax/data modem card the first time. For most of the fax software, I needed at least two or three tries. You'll be glad you can change the program configuration if things don't work the first time around.

DataFAX is a fine piece of software. It performed well for me on a stand-alone PC. If you need network capabilities or do a lot of international faxing, that might tip the scales for you in the direction of DataFAX.

Circle Reader Service Number 372

DELRINA WINFAX PRO 3.0

After spending time with Delrina WinFax Pro, I could just imagine the planners and developers sitting around thinking about what they could possibly include in this latest version so that it would top the previous version. The resulting package, if not the absolute best, is pretty close. During the testing, I opened the manual for a total of 2 minutes. After that, I read for 20 minutes to make an assessment for my rating. When something this complex doesn't need a manual, it says a lot about the software.

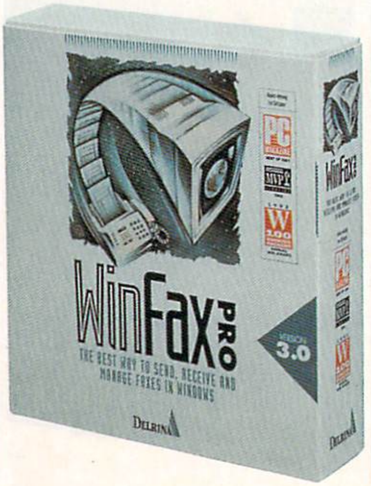
Delrina WinFax Pro 3.0—$129

DELRINA
6830 Via del Oro, Ste. 240
San Jose, CA 95119
(800) 268-6082

All of the standard features are there: background sending and receiving, scheduled transmissions to individuals or groups from one of the phone lists, OCR conversion to text files, and graphical editing tools. These features deserve more than casual mention, because they're the result of years of hard work. But in this day and age, we expect outstanding software—so I'll go on to mention the exceptional points.

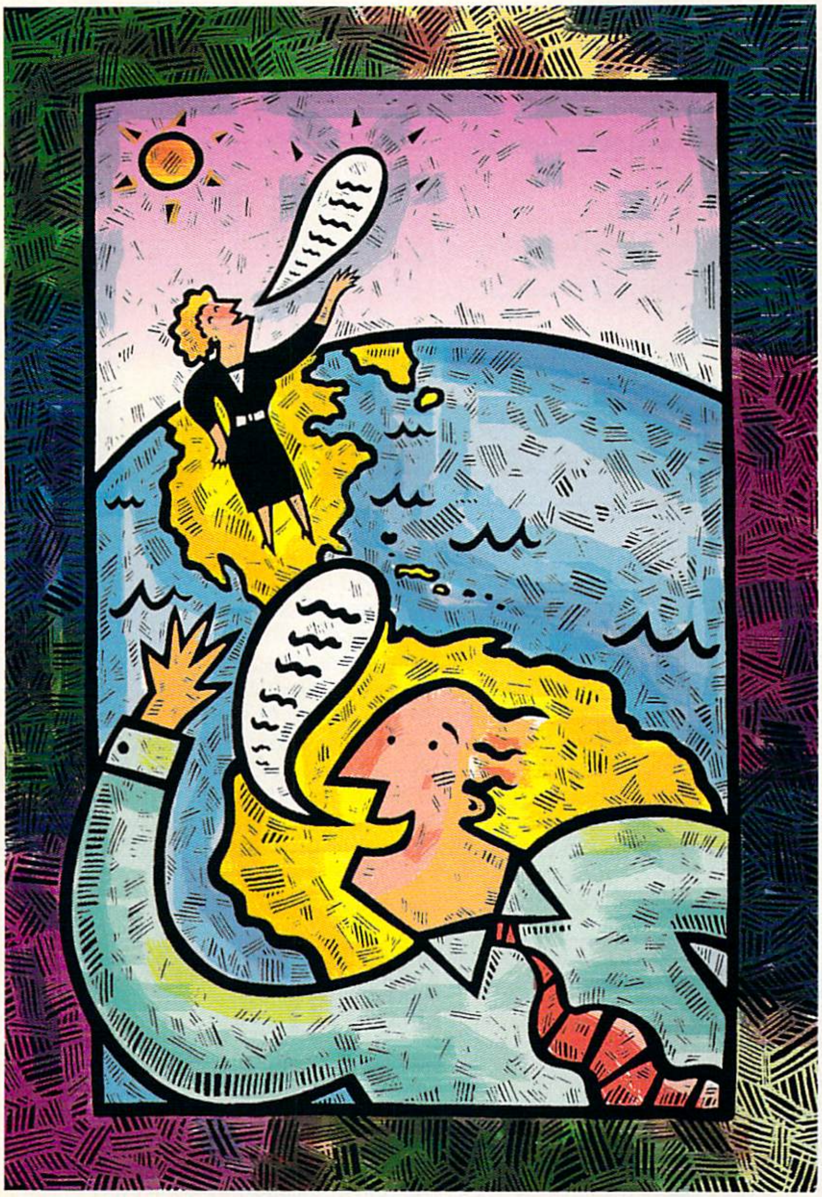
WinFax Pro uses a third-party technology called Caere AnyFax technology. The three programs in our roundup that use it performed OCR conversion about as well as any of the other fax programs. Bear in mind that the comparison program I used had some built-in procedures that tend to lower the score from 100 percent, even for perfectly matched files. Yet WinFax Pro came up with a 68-percent rate of conversion, more than adequate to convert faxes to usable text files.

If you'd rather skip the frills, the next part won't interest you. But most of us will appreciate that Win-


WinFax PRO
THE BEST WAY TO SEND, RECEIVE AND MANAGE FAXES IN WINDOWS
VERSION 3.0
DELRINA

FREE

EXPLORE the INTERNET!



DELPHI is the only major online service to offer you full access to the Internet. And now you can explore this incredible resource with no risk. You get 5 hours of evening/weekend access to try it out for free!

Use DELPHI's Internet mail gateway to exchange messages with over 10 million people at universities, companies, and other online services such as CompuServe and MCI Mail. Download programs and files using **FTP** or connect in real-time to other networks using **Telnet**. You can also meet people on the Internet. **Internet Relay Chat** lets you "talk" with people all over the world and **Usenet News** is the world's largest bulletin board with over 3500 topics!

To help you find the information you want, you'll have direct access to powerful search utilities such as "Gopher," "Hytelnet," "WAIS," and "the World-Wide Web." If you aren't familiar with these terms, don't worry; DELPHI has expert online assistants and a large collection of help files, books, programs, and other resources to help get you started.

Over 600 local access numbers are available across the country. Explore DELPHI and the Internet today. You'll be amazed by what you discover.

5 HOUR FREE TRIAL

Dial By Modem 1-800-365-4636, Press return once or twice.
At Username, enter JOINDELPHI. At Password, Enter CPT311

Complete details are provided during the toll-free registration

DELPHI

Questions? Call 1-800-695-4005. Send e-mail to INFO@delphi.com

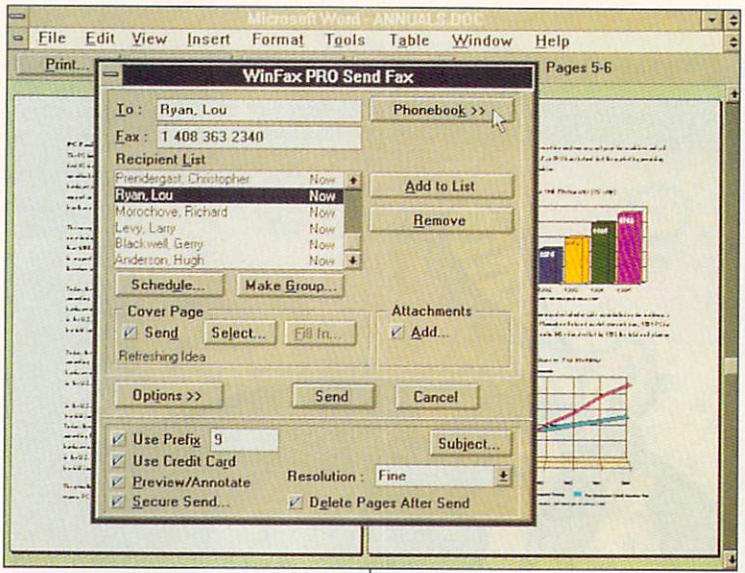
Attention Current Internet Users: *See what DELPHI can offer you! Stock quotes, Grolier's Encyclopedia, newswires, and hundreds of other services are just a few keystrokes away. Telnet to delphi.com and enter the username and password above for a free trial.*

Circle Reader Service Number 161

Fax Pro's cover sheets transform boring and easily lost faxes into experiences that people can't ignore. I counted 105 different cover sheets, all customizable. The next time I can't get results from some company's tech support, I'm going to send the cover sheet with Shakespeare saying "It would be a tragedy if the following went unread." And for collecting past due invoices, I'll use the one with a guy on a ledge saying "We're getting desperate! Please drop us a check!" In all seriousness, cover sheets like these get results.

Another feature I liked was the ability to show thumbnails of all pages of a document. This can be a great help if you want to make sure your presentation has the right overall effect.

Most fax software defaults to automatic answer and reception. WinFax Pro is different. When it's installed, it doesn't automatically answer calls. This small touch might seem insignificant, but wait until your phone line is doubling as a fax and you lose several calls because a caller gets a carrier signal. All of the programs can turn automatic answering off. WinFax Pro's choice of defaults demonstrates a real understanding of how the software is used.



To: Ryan, Lou
Fax: 1 408 363 2340

Recipient List

Prendergast, Christopher	Now
Ryan, Lou	Now
Morochove, Richard	Now
Levy, Larry	Now
Blackwell, Gerry	Now
Anderson, Hugh	Now

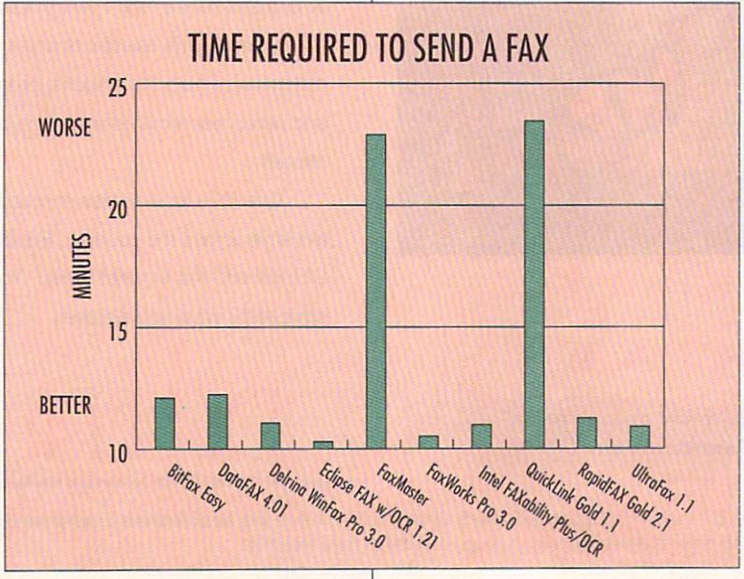
☑ Send
Refreshing Idea
☑ Add...
☑ Use Prefix 9
☑ Use Credit Card
☑ Preview/Annotate
☑ Secure Send...
Resolution: Fine
☑ Delete Pages After Send

The install program does its best to identify your fax/data modem board and its COM port. For mine, it guessed Class 1, but then I couldn't send without transmission errors on the remote end. I had to reinstall the software to make the change. In the next version of WinFax Pro, I'd like to see the ability to make such a change without reinstalling the software.

As for background operations, I noticed only slight hiccups. There weren't any of the delays I experienced with many of the other packages. I had no trouble running other applications while WinFax Pro was in operation.

When I evaluate software, usually there are dozens of features I'd like to see added. Not so with WinFax Pro. If you're looking for power in a fax program, this is definitely one to consider.

Circle Reader Service Number 373



ECLIPSE FAX WITH OCR 1.21

Eclipse FAX with OCR 1.21 takes a straightforward approach to faxing. If you aren't interested in a lot of fancy buttons and cute touches, this package could be the one you're looking for. While the developers didn't waste effort on frills, neither did they skip any important features. Everything you need to do your faxing is included.

The package sends and receives faxes manually or in the background, and it is also capable of scheduled transmissions. It lets you keep multiple phone books, use your scanner for input,

DON'T DO YOUR TAXES!

Let Personal Tax Edge® do the work!

Stop the annual hassle of time-consuming and costly tax preparation. Turn to Personal Tax Edge—software that provides everything you need to plan for and file your 1993 federal taxes. Personal Tax Edge was used to complete over 900,000 returns last year and is now available for DOS and Windows.

Accurate and easy!

It's easy to get started. Personal Tax Edge will act like your own professional tax preparer and actually interview you. From your answers, the program will automatically choose the tax forms needed to accurately complete your return.

All the forms you'll ever need.

All commonly used forms and schedules are built right into Personal Tax Edge and can be printed in an IRS-approved manner on your own paper. Just print, sign and you're done!

Avoid errors!

Personal Tax Edge automatically performs all necessary tax calculations eliminating costly errors. Like an accountant, it audits your return, letting you know where you left out information and flagging entries that are common IRS audit triggers.

Get immediate answers to your tax questions.

Stop wading through IRS publications! Personal Tax Edge has hot-key access to IRS instructions along with an online library of over 300 tax-saving tips and planning ideas.

Rest easy with the double guarantee!

Personal Tax Edge comes with a 30-day money-back guarantee (excluding shipping). And if Personal Tax Edge makes a calculation error, we'll pay the IRS penalty.

"Grand Prize Winner is Parsons' Personal Tax Edge...agreed 100% with the accountant...took advantage of every tax law that was to the benefit of the taxpayer."

NBC Today Show, March 29, 1993
Rated #1 over TurboTax®, TaxCut®, Easy Tax™ and Am-Tax™

Personal Tax Edge

Make tax time easier for only $19!

Normally $49, you can get the Personal Tax Edge *Final Filing Version* (ships January 1994) for just $19 (plus $5 shipping). Or, if you want to get a head start on your taxes, order the *Planning Version* (starts shipping October 1993) and the *Final Filing Version* for an additional $12. When January arrives, your planning information automatically transfers to the final version. Input your final figures, print, sign your return and mail. Doing your taxes has never been easier!

Order today! Call toll free

1-800-223-6925

fax your order 1-319-395-7449
or mail the coupon to Parsons Technology.

MICROSOFT WINDOWS COMPATIBLE

☑ **Yes, send me Personal Tax Edge *Final Filing Version* for just $19 (plus $5 shipping).** Also available at retail stores in late January.

☐ **Also send me the *Planning Version* for an additional $12.**
Also available at retail stores starting November 1.
Iowa Residents add 5% sales tax. Includes User's Guide and Technical Support.

30-DAY MONEY-BACK GUARANTEE
GUARANTEED CALCULATION ACCURACY—OR WE PAY THE IRS PENALTY!

Name ____________________
Address ____________________
City ____________________
State __________ Zip ____________________
Day Phone (____) __________ Evening (____) __________
Disk Size: ☐ 3.5" ☐ 5.25" **Quantity:**______
Version: ☐ DOS ☐ Windows
Method of Payment: ☐ MasterCard ☐ American Express ☐ Visa
☐ Discover ☐ Check or Money Order ☐ COD (Add $5)
Card # ____________________ Exp. ______
☐ **Just send me your FREE software catalog!** Your priority code is 528723L

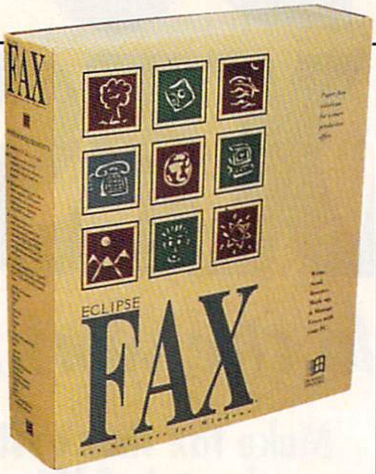
PARSONS TECHNOLOGY

Personal Tax Edge for DOS and Windows also available at leading software retailers

Product Development Center, One Parsons Drive, PO Box 100, Hiawatha, IA 52233-0100

Personal Tax Edge requires an IBM® or compatible PC with 640K, DOS 3.0 or later and a hard drive. Personal Tax Edge for Windows requires an IBM® or compatible PC running Microsoft® Windows 3.1 or higher, 2MB RAM and a hard drive. Works with all monitors and printers. Copyright © 1993 Parsons Technology, Inc. All rights reserved. Tax Edge is a registered trademark of Parsons Technology, Inc. All trademarks or service marks designated as such are marks or registered marks of their respective owners.

Circle Reader Service Number 168



and view and edit faxes. I found the program's well-planned features clear and easy to use.

I frequently use faxes to contact people who haven't answered voice mail. All I need to do is to write them a note of several lines, letting them know what I need. Even the most die-hard voice-mail avoiders, it seems, respond to a fax. Eclipse FAX's Quick Note feature takes you through the simple process of selecting a name from your phone list with a double click, then typing a short note. This is consistent with the package's simple approach. Even with several other software packages installed on my computer, I came back to Eclipse FAX when I needed to send a one- or two-line fax.

Another handy Eclipse FAX feature is its ability to index a collection of faxes. With this feature, browsing or searching through your faxes is a snap. To find a particular fax, just enter a keyword that matches a keyword you typed in when the document was saved. The program also facilitates searches by offering a variety of ways of sorting information.

Eclipse FAX occasionally takes control of Windows for several seconds, most notably in the period of 15–20 seconds when it first connects to a remote fax. During transmission, there are also periods of 2–3 seconds between pages when the program takes control of Windows. It's easy to start clicking the mouse and pressing keys during these periods, but that can be trouble. Each time you click or press, Windows remembers; and once the active application regains control, your clicks and keypresses will all be executed in rapid succession. I spent plenty of time restoring my icons to where they used to be, after numerous pent-up mouse clicks were released.

Eclipse FAX with OCR 1.21—$129

PHOENIX TECHNOLOGIES
Eclipse Division
846 University Ave.
Norwood, MA 02062
(800) 452-0120

On one occasion, I used the program to convert a fax to a text file with the OCR feature. This required a great deal of processor time and involved large numbers of disk accesses. During a background send, the conversion caused an unexpected delay for the remote fax device because the remote device terminated the connection and reported a communication error. Since it happened only once, and that was during unusually heavy system use, I don't think it's a problem. My standalone fax machine occasionally can't complete a transmission for one reason or another.

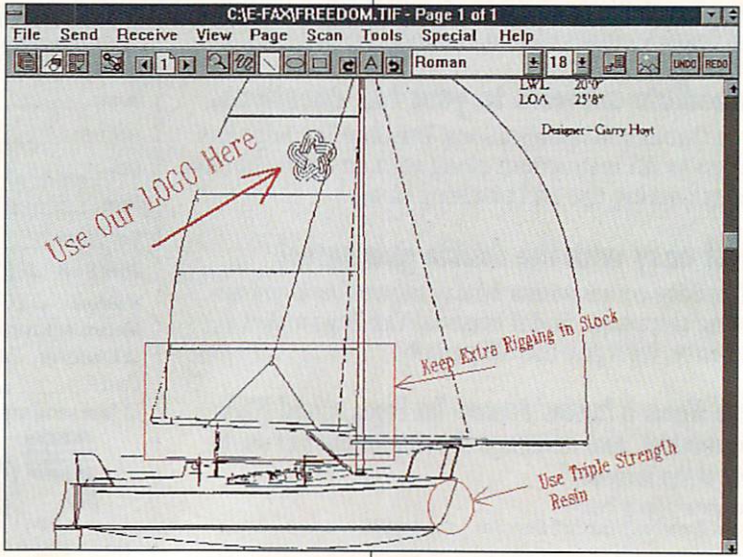
If you're the type who gets right to business and would rather forgo frills, this might be your package. I like it because it doesn't take up much disk space and it's easy to use to send a quick note.

Circle Reader Service Number 374

FAXMASTER

Caere, the company that developed the AnyFax OCR technology, licensed by several other companies, has also developed its own fax software. With such a significant part of the fax technology mastered and at Caere's disposal, it's no wonder. FaxMaster is an easy-to-use alternative to the other packages. Though not as full-featured as some other fax packages, this product boasts a look and feel that may make it your first choice.

All of the important features are there and are professionally implemented. Sending or receiving faxes is simple and effortless. Scanner support, scheduled transmissions, a viewer, and a phone list provide the tools to maximize productivity. Missing are less-important features, such as graphical editing tools, the ability to import and export phone lists, and the abil-



We look terrific in basic black...

COMPUTER BUYER'S GUIDE & HANDBOOK
CBG &H
BEST BUY

PC Computing
HARDWARE 200
1993 FINALIST 1993

BEST OF COMDEX Spring '93
BYTE

PC MAGAZINE
EDITORS' CHOICE
November 24, 1992
NX-2430 Multi-Font

EDITORS' Home Office COMPUTING
PICK

CBG &H
BEST BUY

PC Computing
HARDWARE 200
1993 FINALIST 1993

BEST OF COMDEX Spring '93
BYTE

PC MAGAZINE
EDITORS' CHOICE
November 24, 1992
NX-2430 Multi-Font

EDITORS' Home Office COMPUTING
PICK

but you'll find us equally stunning in color.

THE ALL-NEW STAR SJ-144: Star's achievements are impressive in black and white. But it's in full color that they really dazzle. Now this same brilliance can be brought to your documents at an incredibly affordable price with the full color, laser-quality Star SJ-144.

Star's all new SJ-144 produces vibrant color images far better than any ink jet. And the SJ-144's black and white print quality is so sharp and clear, it actually exceeds the resolution of most laser printers by 20%. In fact, the SJ-144 is more than a match for most any laser printer in every area but one: price. At a MSRP of just $599,* the SJ-144 offers greater value than any other printer available today. For a free product brochure and the dealer nearest you, call 1-800-447-4700.

star SJ-144
PLAN P-6560

star
THE COMPUTER PRINTER

*Dealer price may vary.

Circle Reader Service Number 203

SEND
RECEIVE
OCR
COMPRESS
all your faxes with
the world's most
complete fax software
FAX
MASTER
CAERE

FaxMaster—$109

CAERE
100 Cooper Ct.
Los Gatos, CA 95030
(800) 535-SCAN

ity to change screen colors.

Making a complex piece of software easy to use is no small feat, but Caere has managed to do it. At the top of the screen is the pull-down menu and, below that, six icons representing the major program functions. The remainder of the screen contains either thumbnail documents from which you can select or a full view of a selected document. I like being able to select from thumbnails; it's much easier and more enjoyable to select from these miniaturized representations of faxes than from a list of faxes (usually with dates and times as their only identifiers).

Of course, Caere's OCR technology is state-of-the-art. The AnyFax technology is easily recognizable during the conversion process; you see an image of the fax page and watch the text become highlighted as the program processes it. You can also see a small window with an expanded piece of text while it's operating. FaxMaster scored a 64 percent—not the best score of the lot, but pretty good. Two factors that can affect my comparison of the OCR-produced document to the original document are pagination marks and inserted form feeds. While pagination and form feeds are useful features, they accounted for FaxMaster's lower-than-expected score in the comparison; if the pagination marks are important to you, or you need form feeds for easy printing, don't let the score diminish your appreciation of this package's OCR capabilities.

The computer industry has its share of jargon and buzzwords. I easily added some of these words to the program's user dictionary so that it would have an easier time recognizing them during OCR conversion. This was helpful, since my test document had words like *dBASE, Excel,* and *ASCII*. Adding words to the user dictionary that commonly appear in faxes will improve accuracy.

Most people don't adequately appreciate the value of easy access to a program's setup. After spending a large block of time with this month's fax software packages, I think I appreciate the value of this easy access more than ever. Thankfully, FaxMaster makes its setup parameters readily available from several pull-down menu entries.

I particularly enjoyed using FaxMaster, largely as a result of its easy-to-use interface and easy feature presentation. I didn't

WHAT IS OCR AND WHY DO YOU NEED IT?

When a fax comes in, regardless of what was used to create it, it's really a picture rather than a text file.

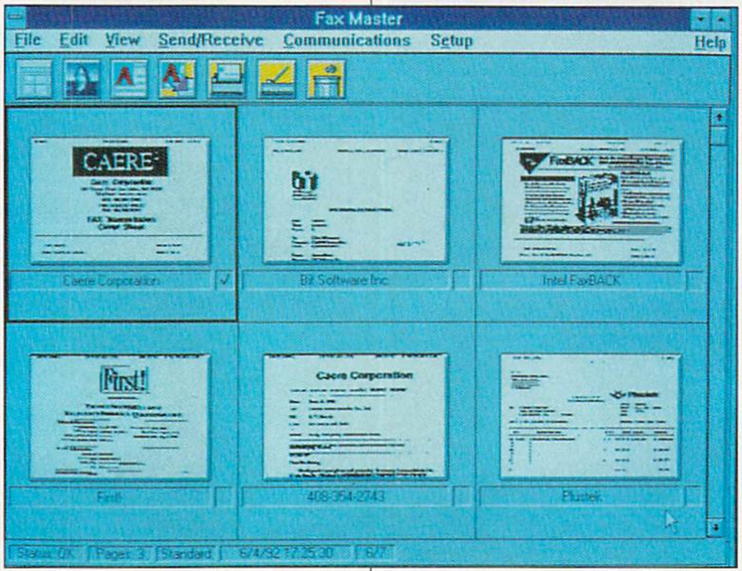
This picture can't be loaded into a word processor for editing. So, if you received a fax from someone with information that had to be faxed to someone else, you couldn't just load it into WordPerfect, make some changes, and send it on. You'd have to manually retype it, edit it, and then send it.

One other disadvantage to these picture files is that they take up far more room on your hard drive than text files. That might be a problem for you if you're anything like me. My hard drive is constantly full!

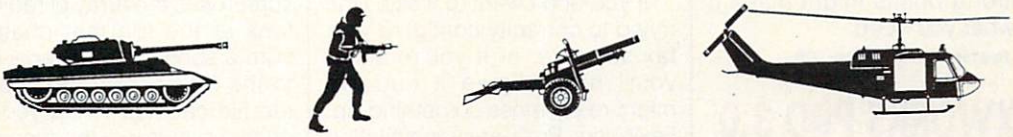
Optical character recognition (OCR) has been developed to the point that it can solve these problems by converting a picture file to an ASCII or word processor file. Many of the fax packages have this capability built in, and it adds a powerful tool to your fax manipulation arsenal. Now you can convert the incoming data to text files and use your word processor to edit them.

OCR isn't perfect. You'll be disappointed if you expect 100-percent accuracy. But correcting a few errors is surely better than retyping an entire document.

—RICHARD C. LEINECKER



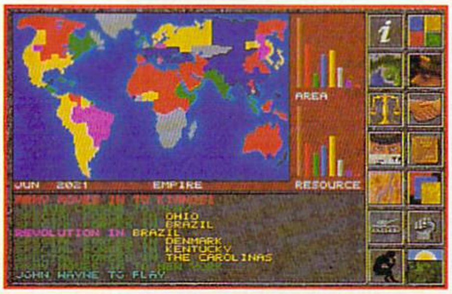
GLOBAL DOMINATION



The Ultimate Multi-Player Conquest Simulation

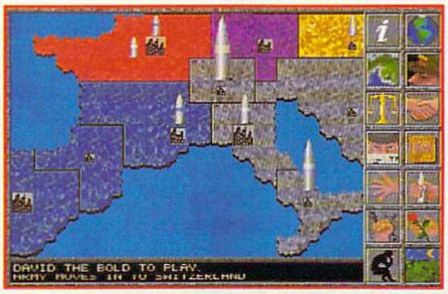
Finally, you can conquer your friends in state-of-the-art graphic splendor! Amass armies with your choice of units, then invade! Watch your back, though - you'll need to divide your forces with care to avoid being conquered yourself!

Global Domination is turn-based and features modem play; a wide variety of historic opponents from which to choose; random world generator; large number of units; spies; diplomacy & subversive activists; by far the best graphics and sound ever seen in a conquest game; and even more fun than Napoleon had at Waterloo!



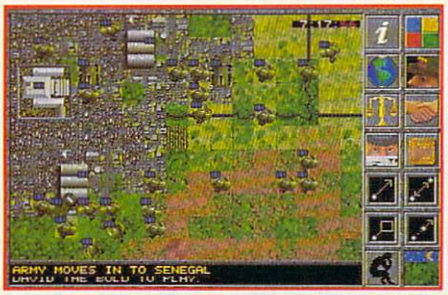
```
                    OHIO
                    BRAZIL
REVOLUTION IN BRAZIL
                    DENMARK
                    KENTUCKY
                    THE CAROLINAS
JOHN WAYNE TO PLAY
```

Take your ego for a rollercoaster ride as you see your empire rise and fall!



```
DAVID THE BOLD TO PLAY.
ARMY MOVES IN TO SWITZERLAND
```

Here's where you amass your armies and make your moves!



```
ARMY MOVES IN TO SENEGAL
DAVID THE BOLD TO PLAY.
```

Take tactical control of a battle in graphically stunning animated combat!

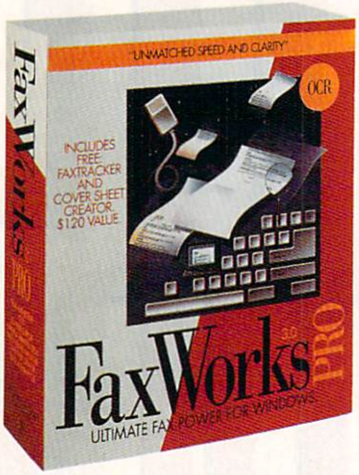
Impressions™

©1993 Impressions Software Inc

IBM PC VGA Screenshots

Impressions Software, Inc. 222 Third Street, Suite 0234, Cambridge MA 02142

Circle Reader Service Number 206


"UNMATCHED SPEED AND CLARITY"
OCR
INCLUDES FREE FAXTRACKER AND COVER SHEET CREATOR $120 VALUE
FaxWorks 3.0 PRO
ULTIMATE FAX POWER FOR WINDOWS

open the manual until it was time to rate it. There were no setup problems, so I was up and running in less than five minutes. Take a serious look at FaxMaster. Its strong points might make it just what you need.

Circle Reader Service Number 375

FAXWORKS PRO 3.0

FaxWorks Pro 3.0—$129.99; $64.99 for lower-end version without OCR and advanced fax management and annotation tools

SOFNET
380 Interstate North Pkwy., Ste. 150
Atlanta, GA 30339
(800) 4-FaxWorks
(404) 984-8088

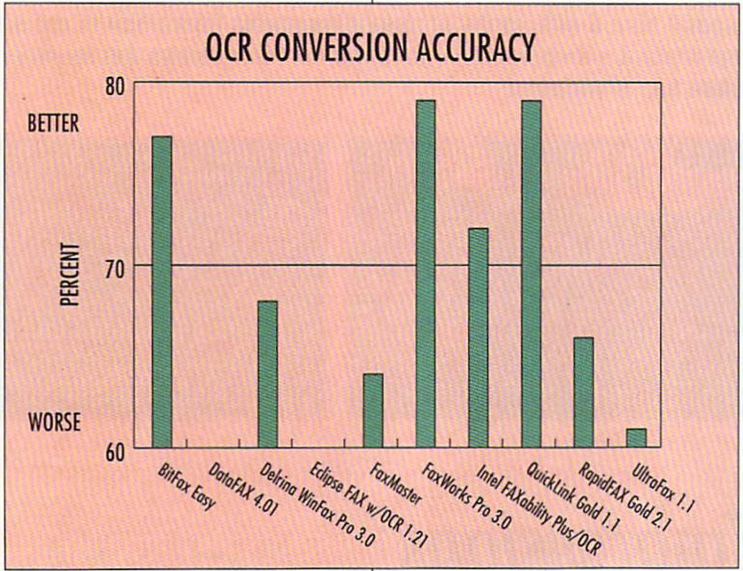
The programmers at SofNet really know fax technology. Their install program found out practically everything about my fax/data modem card. I learned things about it that weren't in the manual, including the chip type and revision number. This mastery of the technology translated into worry-free fax sending and receiving.

The features you'd expect are there: sending and receiving, OCR conversion to text files, phone lists, scanner support, and an easy-to-use viewer. You'll also find one of the best cover page creation utilities, which includes hundreds of clip art images.

If you don't want to waste time trying to correctly configure your fax software, or if you're afraid you'll never figure it out and might really mess something up, FaxWorks Pro's easy installation makes it a good choice. By contrast, I spent several days configuring, reconfiguring, and reinstalling some of the other software to get everything working. That's a lot of time for someone who's competent and computer-literate.

There's one feature in this package that I've never seen in any other software, and that's a quick way to access system configuration files. Using a pull-down menu, you can view and edit your WIN.INI and FAXWORKS.INI, among others. If I'd experienced trouble getting things to work, this might have been a valuable ability. I guess the folks at SofNet wanted to make sure their tech support people could easily help customers in case there was a problem.

The main screen in FaxWorks Pro isn't fancy, but the six icons are enough to help you navigate without much need to pull down menus. One icon calls up what SofNet calls a FaxTracker, which is a general fax maintenance window. What I liked best about this screen was the array of radio buttons at the top that change it from a send log to a receive log to the file access dialog box to the file cabinet. When you click on these buttons, the function of the FaxTracker changes, but you


OCR CONVERSION ACCURACY

OCR CONVERSION ACCURACY

Each of the fax packages received a ten-page document with nothing but straight ASCII text. There were no lines or other marks that couldn't be converted to text. The faxes were then converted to text files and compared with the original document from which the faxed printout was made.

The program that I used to compare the files employs some procedures that make it impossible for any of these fax products to score 100 percent. Files that are identical to the original document score 92 percent, so any score close to that is pretty good. The best score was 79 percent—good enough that some quick editing gave me a usable file.

For my own curiosity, I tried a handwritten note as well. None of the OCR technologies in these fax packages scored better than 1 percent. I guess we're still at least a few years away from OCR technology that does well with handwritten files.

—RICHARD C. LEINECKER

SOUNDMAN 16

EVEN THE BEST EQUIPMENT NEEDS SOLID SUPPORT.

SOUNDMAN 16. THE BEST SUPPORTED CD-QUALITY SOUND BOARD IN THE BUSINESS.

SoundMan™ 16 is endowed with 7 day-a-week technical support, a 3-year free replacement warranty, a limited lifetime warranty, and discount hardware upgrades. SoundMan includes 16 bit, 44.1 KHz sampling/playback, a 20-voice Yamaha OPL-3 stereo synthesis chip, sound-enhanced jumperless installation, and a bundle of multimedia titles including MCS MusicRack, Screen Craze II and ICON Hear-IT Lite. It's guaranteed 100% SoundBlaster™ and AdLib® compatible, and is the only 16-bit sound board backed by Logitech's reputation for quality and service. Pick one up at your local dealer, or call **1-800-732-2957.**

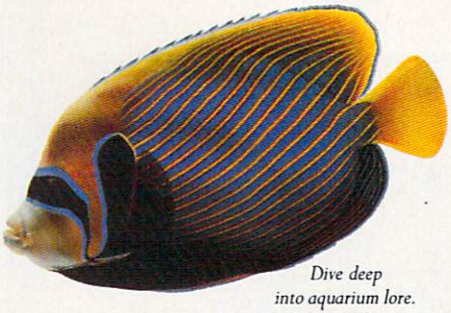
LOGITECH

The Senseware™ Company

™/® Trademarks belong to their respective owners.

Circle Reader Service Number 123

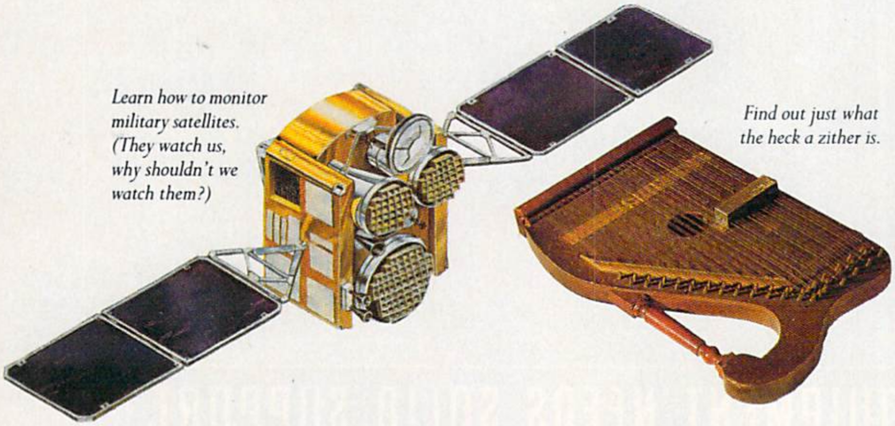
*Shop. But don't drop. Need a 100% cotton pinpoint oxford shirt with button-down collar? In ecru? Try on our Electronic Mall.**



Dive deep into aquarium lore. Like whether a canister or protein filter is better for a 110-gallon saltwater tank.

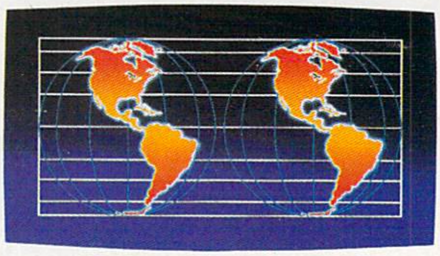
Price a new Mustang. Or just learn everything about it.

Finally, a computer information service you can't outgrow. No matter how hard you try.



Learn how to monitor military satellites. (They watch us, why shouldn't we watch them?)

Find out just what the heck a zither is.



Talk to twice as many people about parallel universes.

No matter what you're into, you can get more out of CompuServe.

You can range widely over a list of services that will help you, entertain you, teach you, and challenge you. Or, you can delve deeply into favorite topics, learning (or even teaching) more, meeting experts, and making friends with people who share your interests.

Because CompuServe is filled with people, from beginners to experts. So you can share software or work out a few personal computer bugs with your system's designer on Monday, battle a nefarious evildoer from Cleveland on Tuesday, and fax someone a list of bed and breakfasts in Vermont on Wednesday.

And that still leaves you the rest of the week to keep exploring. In fact, the more you use CompuServe, the more uses you'll find for it. It's the one computer

WASHING
?
上陸許可
VISA
ADMITTED
Status: Temporary Visitor
Duration: 90 Days
入国審査官・日本国

Learn a sensible way to get the dollars to start a new business.

Find out why your PC won't talk to your LAN. And what you can do about it.

Find out how in the world to apply for a visa.

Copy down a truly delicious tofu recipe. (Really!)

Discover a good place to dive, or get the lowdown on bouyancy compensators.

Get the current phone number of your old friend from high school, and tell his new wife why you used to call him "Stinky."

information service you won't outgrow. But you will have a good time trying.

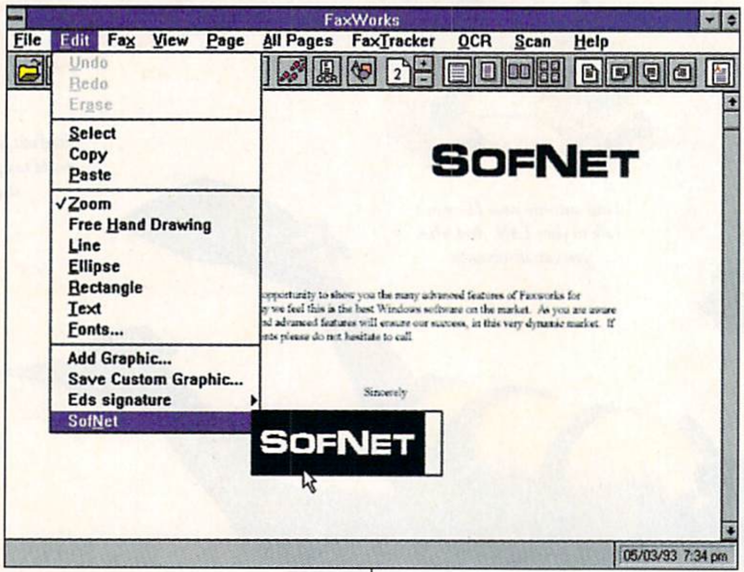
For a low one-time membership fee and $8.95 a month, you can use our most popular services as often as you like: news, sports, weather, shopping, reference materials, our electronic mail service of up to 60 messages a month, and more. Plus, there's a whole universe of other, extended options available at nominal additional charges.

Your first month on CompuServe will be free, and we'll give you a $25 usage credit to explore our extended services.

To buy a CompuServe Membership Kit, see your computer dealer. For more information, or to order direct, call 1 800 848-8199 (614 457-0802 for international inquiries).

CompuServe®

The information service you won't outgrow.™


FaxWorks
File
Edit
Fax
View
Page
All Pages
FaxTracker
OCR
Scan
Help
Undo
Redo
Erase
Select
Copy
Paste
✓Zoom
Free Hand Drawing
Line
Ellipse
Rectangle
Text
Fonts...
Add Graphic...
Save Custom Graphic...
Eds signature
SofNet
SOFNET
Sincerely
SOFNET
05/03/93 7:34 pm

don't have a different dialog box. That means you don't have to learn four different windows or dialog box styles for these four different program segments. Consequently, the interface reduces the learning curve immensely.

One attractive feature that Windows newcomers in particular will appreciate is FaxWorks Pro's great system of context-sensitive help. There are two levels: one that simply gives you a single line of text and another that gives you large cue card–style blocks of help. In either case, you'll get plenty of help while you're learning the software. I found the comprehensive help that's accessed from the Help menu very complete and well written.

The OCR technology performed admirably. It scored 79 percent, making it one of the best I tested. It wasn't fast, and there wasn't a snazzy display while it operated, but with results like that, who cares? With a few minutes of editing, my conversions were perfectly usable.

FaxWorks Pro gave me trouble-free service. It doesn't have a lot of fancy features, but it has everything you'll probably need.

Circle Reader Service Number 376

INTEL FAXABILITY PLUS/OCR

Intel FAXability Plus/OCR is a solid piece of software from a company famous for world-class microprocessors. It has a moderately long feature list, and I found the interface workable, but the installation involved more effort than I had planned on. Probably its most distinctive feature, and the one that may sell you on the product, is its ability to convert faxes to popular word-processing formats.

The major features are there—background receive and send, OCR conversion to text files, scanner support, phone lists, and custom cover pages. Some less-important features are missing, such as automatic printing of incoming faxes, automatic fax cleanup, graphic editing tools, and the ability to change screen colors. Of these missing features, the automatic fax cleanup is the only feature I use occasionally in the other fax packages. FAXability does include some features not found in the others. You can print faxes in landscape or portrait mode and load different printer fonts, for example.

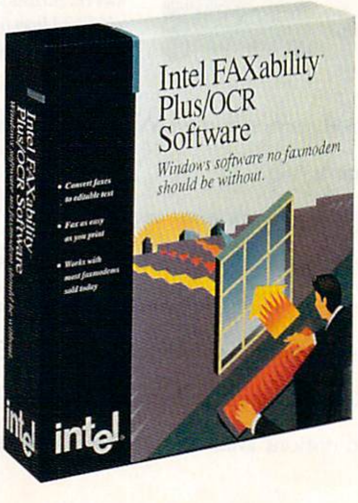
The OCR conversion performed well. My benchmark test measured OCR accuracy at 72 percent. Other measures of OCR accuracy would probably be better than 80 percent. The benefits of OCR here, as in other packages covered this month, are clear. You can use the text files created from the faxes as you would any other documents, or you can use them as records of the faxes from which they derive.

The amazing thing about the FAXability OCR conversion process is the enormous variety of formats it outputs to. You can convert faxes not only to straight ASCII files but to compatible files for most major word processors, including Microsoft Word, Microsoft Write, Ami Pro, PFS Professional Write, WordPerfect, WordStar, and XyWrite. And that's a small part of the list. It also converts to dBASE, Microsoft Excel, and Lotus files.

I had a tough time getting the software to work on my system. After I had sent a fax, my mouse became erratic and Windows lock-

Intel FAXability Plus/OCR—$129;
$79 for version without OCR

INTEL
P.O. Box 14070
Portland, OR 97214
(800) 538-3373


Intel FAXability Plus/OCR Software
Windows software no faxmodem should be without.
Intel FAXability Plus/OCR Software
Convert faxes to editable text
Fax as easy as you print
Works with most faxmodems sold today
intel
intel

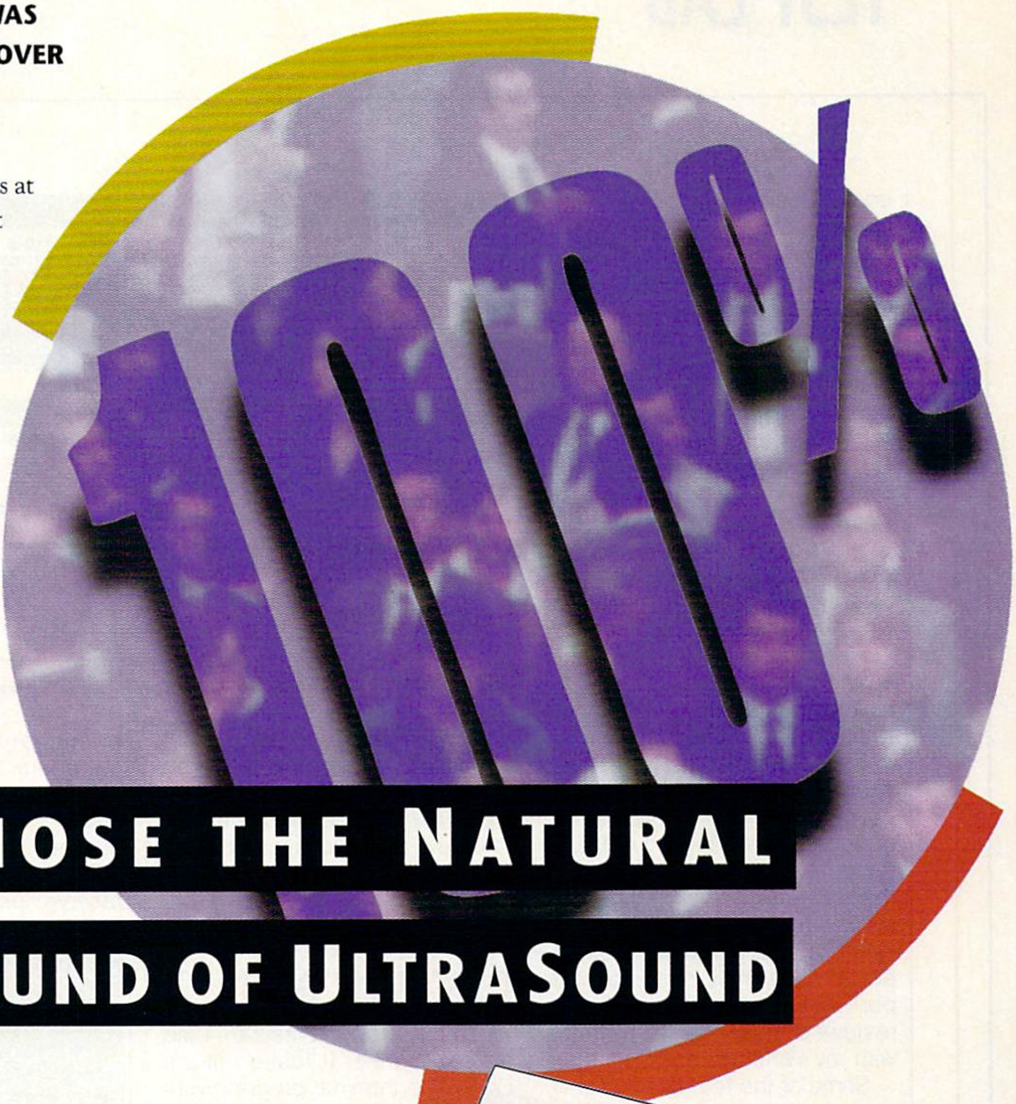
IN COMPARATIVE SOUND TESTS GRAVIS ULTRASOUND WAS UNANIMOUSLY CHOSEN OVER THE "BEST" FM-16 BIT SOUND CARD.

We conducted the sound tests at CES and PC Expo and played it completely fair. The test was conducted with the same MIDI files, on the same computer, at the same time, and through exactly the same equipment. The result? To absolutely all who listened, UltraSound was overwhelmingly preferred.

UltraSound received this vote of confidence because it is not just another sound card. Our card's revolutionary wave-table technology delivers full, natural sounding instruments and unmatched sound effects – not the artificially created sounds of FM sound cards.

UltraSound is the next generation of sound technology. With its 16-bit, 44.1 kHz CD quality stereo sound, UltraSound is compatible with applications supporting Ad Lib® SoundBlaster™, Windows 3.1, MPC, General Midi, and popular CD ROM titles.

You have to experience the natural sound to believe it. Hear the difference with a sound performance at your Gravis dealer now! Or call Gravis for more information:
1-604-431-5020
1-604-431-5155 (fax)



CHOSE THE NATURAL SOUND OF ULTRASOUND

ULTRASOUND IS RECOGNIZED BY THE "BEST OF COMDEX SPRING '93" AWARDS

BEST OF BYTE COMDEX Spring '93

UltraSound was the only sound product to be selected for the "Best of Comdex Awards" (Multimedia Category) by Byte Magazine at COMDEX '93 in Atlanta Georgia.

1993 MULTIMEDIA WORLD READERS' CHOICE FINALIST

Advanced
GRAVIS
Computer Technology Ltd.

Circle Reader Service Number 204

All brands and trademarks are the property of their respective owners.

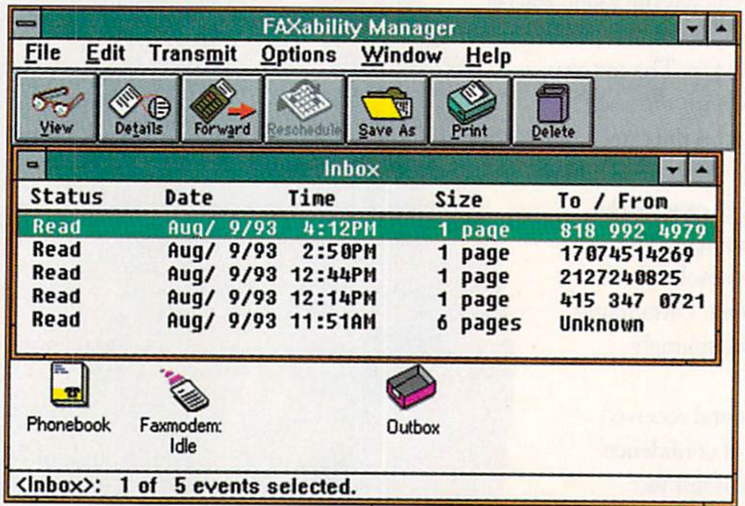
ed up. I tried a multitude of reconfigurations, and this took quite a long time, since a complete system restart is necessary with each new configuration.

I finally called an Intel technical support representative, who solved my problem. My COM ports in Windows were set up in such a way that a conflict was created between COM 3 and COM 4. I never understood this entirely, since I don't have a serial port on COM 3 (my communications card was COM 4). I spent about five minutes explaining to the technician why the problem wasn't my mouse driver. He eventually checked with someone else and told me how to change my Windows port settings. This did the trick.

I should have stopped there. The technician recommended I download a newer version of the program's CAS driver. I did, and things stopped working. To get my system working properly again, I had to delete the directory and reinstall the software. Granted, fax software is difficult to support, but no other fax packages reviewed here had problems with my Windows port settings.

Some of the features FAXability has might be important to you. You might need to save faxes in your word processor or spreadsheet format. Once configured properly, the software worked well. Just keep in mind that you may have to spend some time getting it to work the way you want it to work.

Circle Reader Service Number 377



Status	Date	Time	Size	To / From
Read	Aug/ 9/93	4:12PM	1 page	818 992 4979
Read	Aug/ 9/93	2:50PM	1 page	17074514269
Read	Aug/ 9/93	12:44PM	1 page	2127240825
Read	Aug/ 9/93	12:14PM	1 page	415 347 0721
Read	Aug/ 9/93	11:51AM	6 pages	Unknown

<Inbox>: 1 of 5 events selected.

QUICKLINK GOLD 1.1

When this program first ran, I did a double take. It looked like a DOS-style terminal program with some Windows-like icons at the top. Looks can be deceiving, though, and I quickly grew attached to this software. More than just fax software, QuickLink Gold 1.1 is a complete telecommunications package.

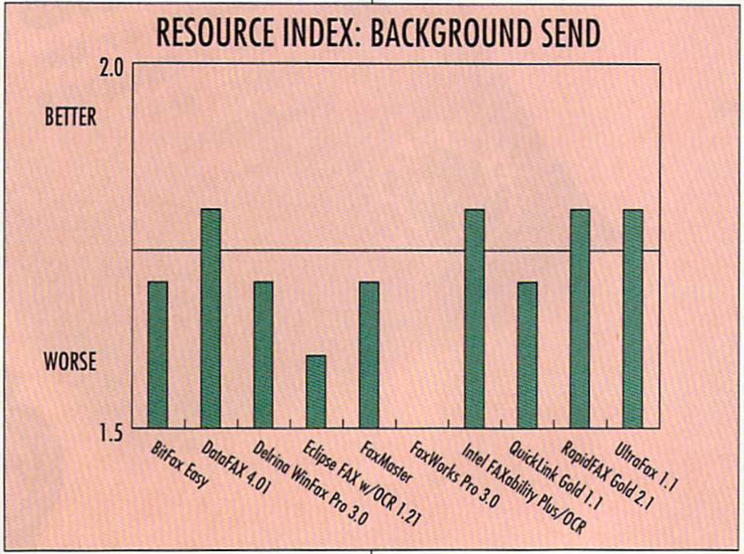
The designers and developers deserve special mention for their

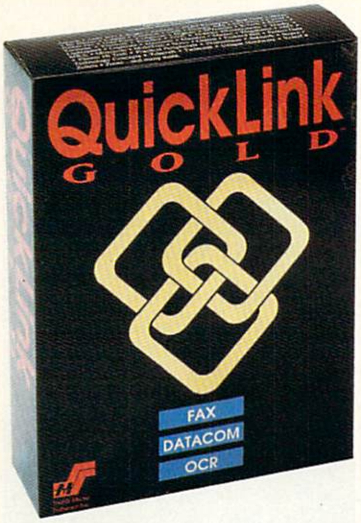
RESOURCE INDEX: BACKGROUND SEND

This test was performed by selecting a fax board as the default printer and then printing the first ten pages of a document from Microsoft Word. The fax software prepared the documents, then dialed out and sent them. The test started when the dial-out was initiated and ended when the remote fax signaled an end to the transmission.

In this test, the number recorded is an index of the amount of processor time available for applications other than the fax program running in the background. A perfect score would be 2.0; however, even with the background fax software idle, only a score of 1.9 is achievable, since Windows performs a number of background functions. The best score any of the fax software products achieved was 1.8.

The columns in the accompanying chart reflect the relative performance of the ten fax software products covered in this Test Lab. A high score means that you won't constantly experience slowdowns during background sends.


RESOURCE INDEX: BACKGROUND SEND



willingness to go against the grain. In several noticeable places, the interface deviated from what you'll find in every other Windows program in this roundup. The main screen is black with green text, in contrast to the normal Windows look and feel. After my initial surprise, I was thankful. When returning from the program's other windows with the typical Windows look, such as the fax viewer and setup dialog boxes, I always knew when I was home at the main screen. Other very nice touches were 3-D text and a modem LED simulation in the status box on the screen.

QuickLink did especially well converting faxes to text files. In my benchmark test, it scored 79 percent. However, QuickLink keeps track of its own success rate and registered a score of 92 percent. These two scores are different because the program counts only the unrecognizable characters, not the ones it gets completely wrong. The reality of QuickLink's success with OCR lies somewhere between my score and the program's—which is pretty remarkable.

Hats off to QuickLink for determining my exact hardware configuration on the first try. It worked perfectly from the start, and I never gave it a second thought after that. I don't guarantee you'll have the same success rate; I do, however, think that my experience with QuickLink speaks very well for the product, especially in contrast to the difficulties I had with other installations.

QuickLink Gold 1.1—$99.95

SMITH MICRO SOFTWARE
51 Columbia
Aliso Viejo, CA 92656
(800) 964-SMSI

I was surprised by the amount of time the program required to send a ten-page document: It took 23 minutes and 28 seconds to send a simple ten-page document from Microsoft Word. That's double the time required by most of the other packages. There's probably a technical explanation for this, but I don't know what it is. You might not care, though. Since the send procedure goes on in the background, it won't stop you from working. If you're not constantly sending faxes, this probably won't be an issue.

I know this isn't a review of telecommunications software, but I'm dying to tell you just a little about that part of the program. Besides, some of you might want to get this program because it can serve all of your communications needs, not just your faxing needs. There's a built-in host mode. You can leave it running and dial in to access any file on your computer. All of the major file transfer protocols, such as XMODEM, YMODEM, and ZMODEM, are built-in. And you can define macro keys to skip some of the steps when you log on to BBSs and online services.

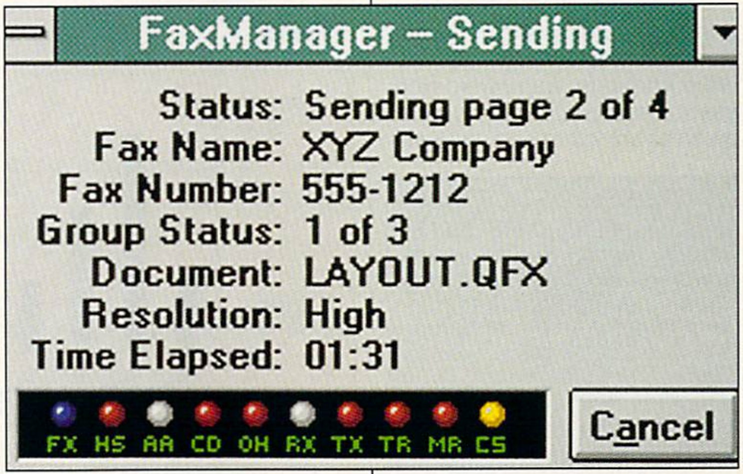
QuickLink is a fine piece of software. It'll fill most of your telecommunications needs. On my system, it worked well, without any fuss—and that's worth a great deal to me.

Circle Reader Service Number 378

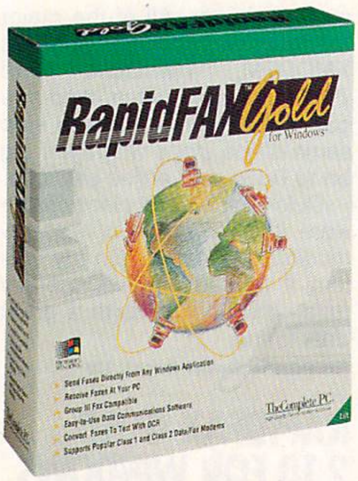
RAPIDFAX GOLD 2.10 FOR WINDOWS

As soon as you run it, you can tell that RapidFAX is strictly business. Greeting you as the program opens are its three most important sections: the send log, the receive log, and the phone books. It was quite a while before I found it necessary to pull down any menus, since the icons and information in the windows are enough to help you do just about anything you might need to do with this program.

All the features you need for productive faxing are there—scheduling transmissions, OCR conversion, phone lists, scanner support, and cover sheets. RapidFAX lacks some infrequently used features, such as fax-editing tools,



Status: Sending page 2 of 4
Fax Name: XYZ Company
Fax Number: 555-1212
Group Status: 1 of 3
Document: LAYOUT.QFX
Resolution: High
Time Elapsed: 01:31



RapidFAX Gold 2.10 for Windows—$129; $79 for version without OCR or modem software

THE COMPLETE PC
1983 Concourse Dr.
San Jose, CA 95131
(800) 229-1753

automatic fax cleanup, and the ability to import and export your phone lists. For most small businesses, there's more than enough to meet communications needs.

The OCR conversion utility was up to snuff. It scored a 66 percent, more than adequate for reading and understanding later. With a little time and effort, the text files could easily be edited and reused or resent later.

Another plus is the ability to import and export different types of file formats. You can load any BMP, PCX, or TIF file and send it as a fax. That's really great, because you can capture just about anything in Windows and save it as PCX and BMP files. You can easily send presentation pages that include graphs and charts.

There's a built-in memo function that quickly allows you to send a memo to a destination fax without having to load a word processor. I use this feature about as much as any other and am grateful for its inclusion. There's also a function that checks the integrity of files. I never found any inconsistencies in mine, but if I were having problems, this might be at the top of my list of favorite features.

Most computers come with the first two COM ports occupied by a serial port and a mouse. This is the case with my system and most systems I've used in the last three years. (The bad part is that my manuals that explain how to reconfigure those serial ports are always lost.) This configuration is a problem with RapidFAX, since it installs only to COM 1 or COM 2. And to further aggravate the situation, I didn't know any of this until after I installed it and tried to reboot. The memory-resident software that loads from AUTOEXEC locked up, since I didn't have a fax/data modem card on COM 1 or COM 2.

To make a long story short, I

RESOURCE INDEX: BACKGROUND RECEIVE

As with the background send, an index was calculated demonstrating the processor time available for other applications. The closer the number is to 2.0, the better. The time elapsed during the receiving of the ten pages was not recorded, since the sending fax device determined how much time was needed.

HOW FAXES WORK

Fax communications tend to be pretty one-sided, as one fax device transfers information to the other. Here's a brief description of how two fax devices observing standard protocols talk.

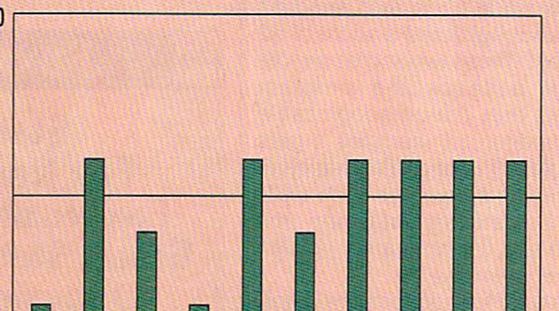
The sending device dials another fax device, which automatically answers and sends a 2100-Hz tone back. For the musically inclined, that's a slightly sharp C three octaves above middle C. This tone confirms that a fax machine has been reached and not a voice line or another machine type.

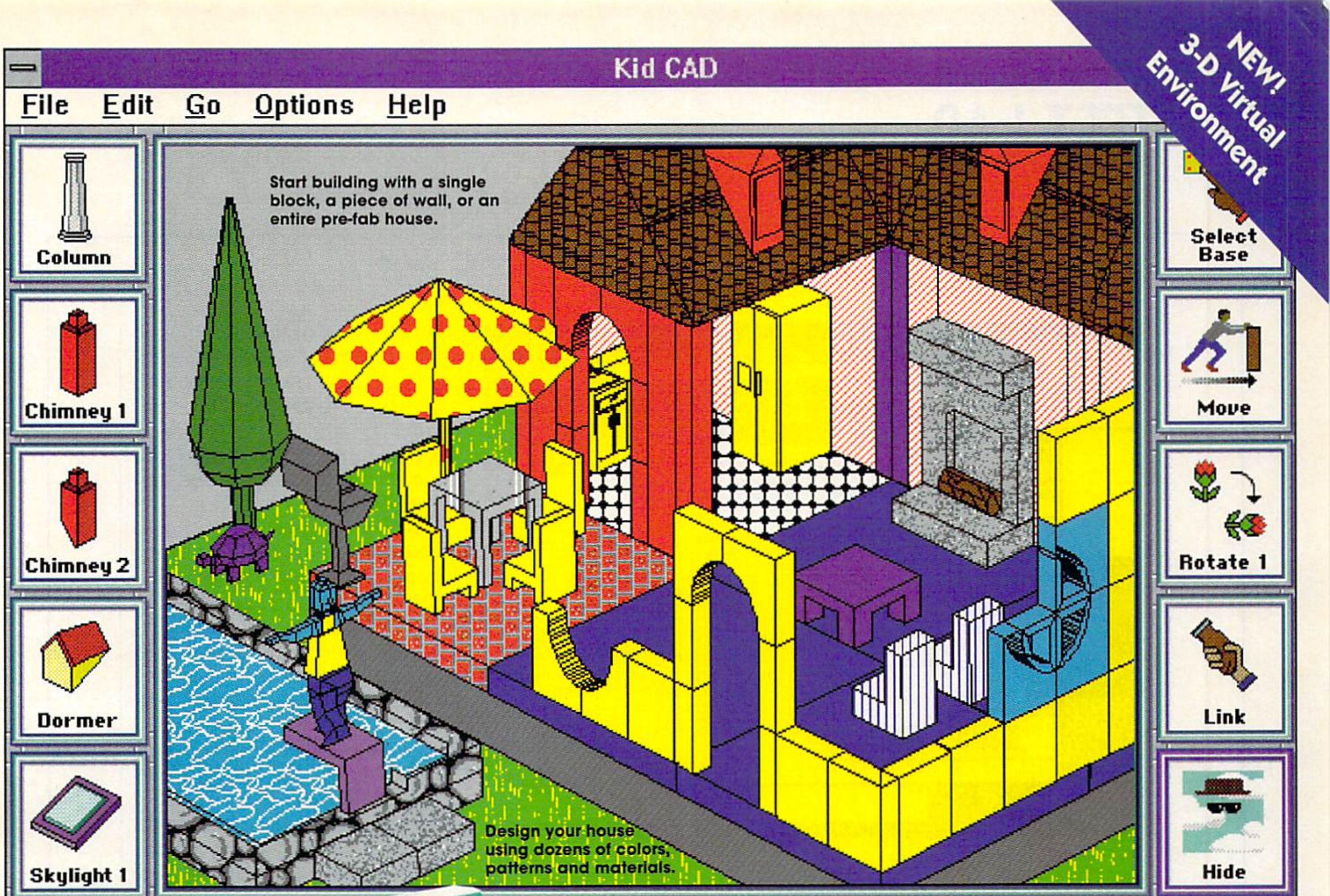
The called fax device sends an identification packet at 300 baud. This packet contains all of the fax device's capabilities. The calling device sends a packet with the capabilities it selects for the exchange. Then the calling device sends a high-speed training signal, and the called device sends a message indicating that it's ready.

All of the information is sent from the calling device, punctuated by short training messages. After all pages have been sent, the calling device sends a message indicating the end of transmission. The called device sends a confirmation. Finally, the calling device sends a disconnect signal, and both units disconnect from the phone line.

—RICHARD C. LEINECKER

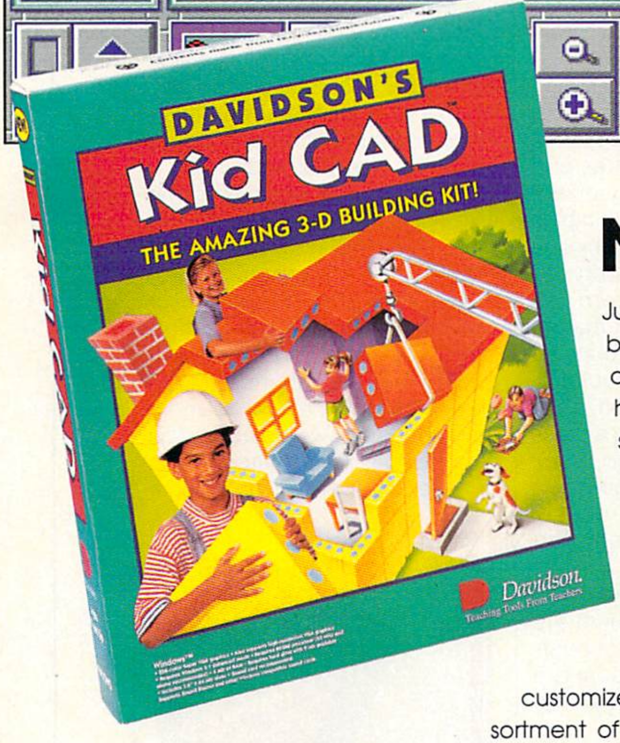
RESOURCE INDEX: BACKGROUND RECEIVE




NEW! 3-D Virtual Environment
Kid CAD
File
Edit
Go
Options
Help
Column
Chimney 1
Chimney 2
Dormer
Skylight 1
Select Base
Move
Rotate 1
Link
Hide

Start building with a single block, a piece of wall, or an entire pre-fab house.

Design your house using dozens of colors, patterns and materials.


DAVIDSON'S
Kid CAD
THE AMAZING 3-D BUILDING KIT!
Davidson.
Teaching Tools From Teachers

Ages 7 and Up

No hard hat required!

Just grab your mouse and start building! This amazing 3-D design studio lets you create houses, forts, gazebos, and all sorts of structures with electronic building blocks that click into place. And with **Kid CAD**, building is only the beginning. You can paint and decorate everything in sight, including the kitchen sink! Then fill your customized creation with a huge assortment of people and pets, furniture and ferns—or even a dinosaur.

Kid CAD's 3-D Virtual Environment lets you change your perspective. View your house from the backyard or peek through the front door. With the simple click of a button you can zoom in or out, switch from a bird's-eye view to eye level, or circle around to see your house from a different angle.

Plus, **Kid CAD** is loaded with sensational sound effects that make building as fun as it sounds!

Suggested Retail Price:
$49.95 Windows

ORDER TOLL FREE
(800) 545-7677 or (310) 793-0600

MICROSOFT® WINDOWS™ COMPATIBLE

Look for these other award-winning Davidson Kid Tools!

DAVIDSON'S
Kid Works 2
The Creativity Kit that Writes, Paints, & Talks!
DAVIDSON'S
Kid Keys

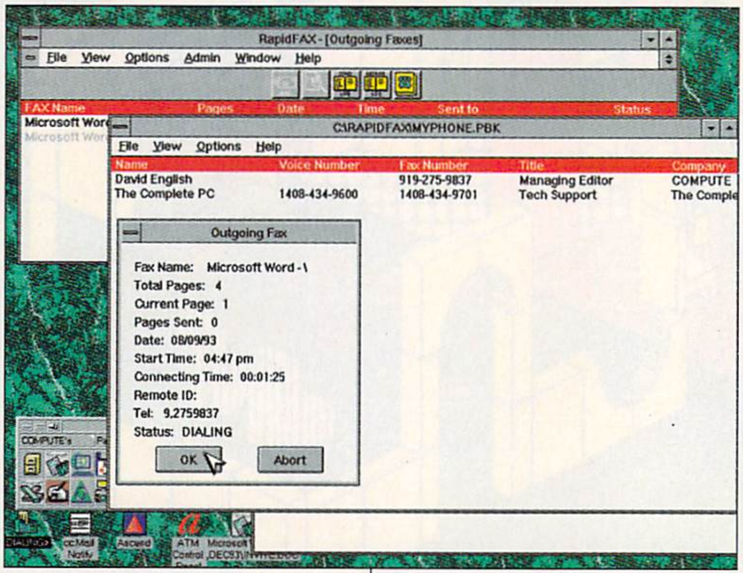
Davidson's Kid Works™ 2
The Creativity Kit That Writes, Paints, and Talks!

Davidson's Kid Keys™
The Magical Typing Tutor

Davidson.
Teaching Tools From Teachers

Circle Reader Service Number 106

Available at Babbage's, Best Buy, CompUSA, Egghead Software, Electronics Boutique, Software Etc., and other fine retailers. Windows™ is a trademark of the Microsoft Corporation.



Name	Voice Number	Fax Number	Title	Company
David English		919-275-9837	Managing Editor	COMPUTE
The Complete PC	1408-434-9600	1408-434-9701	Tech Support	The Comple

Fax Name: Microsoft Word - \
Total Pages: 4
Current Page: 1
Pages Sent: 0
Date: 08/09/93
Start Time: 04:47 pm
Connecting Time: 00:01:25
Remote ID:
Tel: 9,2759837
Status: DIALING

spent six hours changing the jumpers in my computer, reinstalling the software, and fixing the problems the process created. If you're considering RapidFAX, make sure that your fax/data modem card can easily be configured for COM 1 or COM 2.

Another battle that I faced was finding the right fax/data modem type so that there wouldn't be any transmission errors. Generic Class 1 and Generic Class 2 didn't work, so I resorted to trial and error. It wouldn't have been so bad if the changes went into effect right away, instead of after the next time the system booted. After a number of tries, I determined that the BOCA 14.4 setting worked well (for my TwinComm fax/data modem.)

If you have a fax/data modem card that's been around for some time, chances are that it'll be on the list. That means you won't encounter the same problems I did. And if your device is on COM 1 or COM 2, you won't have any problems with RapidFAX. Since there are a number of features to recommend this program, take a look. It might be just right for you.

Circle Reader Service Number 379

ULTRAFAX 1.1 FOR WINDOWS

When the UltraFax window first appears, you'll know at a glance what UltraFax has to offer and how the program is organized. Five descriptive icons with labels such as In Box and Out Box line up along the bottom, giving you access to the main program areas with a double click. At the top of the screen is a row of buttons. When the windows associated with these buttons are open, a single mouse click gives you access to choices such as Send, View, and Print. And the pull-down menus offer complete control over navigation through any part of the program.

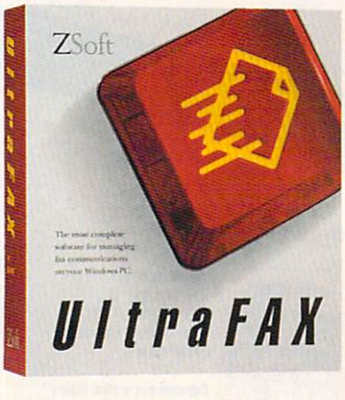
UltraFax has all the features you'd expect. Among them are scanner support, OCR conversion, multiple phone lists, and a viewer with graphical editing. There isn't room to talk about all of these, but they reveal craftsmanship and high quality. There are, however, several things which differentiate UltraFax from the other fax programs, and these differences may make this package just what you're looking for.

While working with ten fax packages, I learned to appreciate what others might call "the little things." Being able to change every part of the hardware setup without reinstalling the software became something I looked for right away. Since my fax/data modem card was new on the market at the time of testing, I had to search for just the right settings through trial and error. Several of the packages without this ability (to change the hardware settings without reinstalling the software) cost me at least an hour. And if you're a computer neophyte, an installation with one of these other packages might chew up an entire day. My thanks to the manufacturer for making sure this often-overlooked capability was included.

UltraFax also impressed me with its terrific graphical editing tools. ZSoft has long been one of the leaders in graphics programs. Most of us, at one time or another, have used PC Paintbrush, one of the first commercial-quality paint programs for IBM compatibles. UltraFax has more than enough power to add a few nice touches to an outgoing fax or cover letter or to create some

UltraFax 1.1 for Windows—$49.95

ZSOFT
450 Franklin Rd., Ste. 100
Marietta, Georgia 30067
(404) 428-0008



Boldly Go Where No Math Program Has Gone Before!

Over 1.5 million Math Blaster's sold! The world's best-selling math program just got better!

Math Blaster:® In Search of Spot *launches the world's best-selling math program to a whole new level of learning and fun! Kids will join Blasternaut on an all-new action-packed adventure to rescue his robot pal Spot. As they search the universe, they'll boost their mental math and problem-solving skills into the stratosphere!*

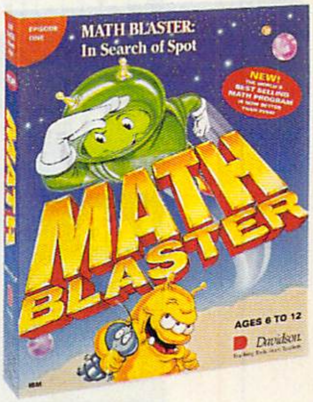
America's favorite math software for ten years running now gives parents and kids even more to love...

More math content than any other program!

Now with over **50,000** different problems available in nine key subject areas: Addition • Subtraction • Multiplication • Division • Fractions • Decimals • Percents— Plus *two new topics:* Estimation and Number Patterns.

More fun than ever before!

Exciting new learning games, out-of-this-world VGA graphics, digitized speech, sound effects and music will keep kids so dazzled they'll never want to come down to Earth! And for even more variety, there are now two ways to play: focus on a single activity or take off on a mission that combines all four into one awesome learning adventure!


MATH BLASTER:
In Search of Spot
NEW! THE WORLD'S BEST SELLING MATH PROGRAM IS NOW BETTER THAN EVER!
MATH BLASTER
AGES 6 TO 12
Davidson.
IBM

IBM, Tandy and PC Compatibles
Windows version available Nov. 93

Ages 6 to 12

"Kids have always loved Math Blaster, and Math Blaster: In Search of Spot is no exception. It's even better than its predecessors–more fun and more educational."

Rob Bixby
Compute Magazine

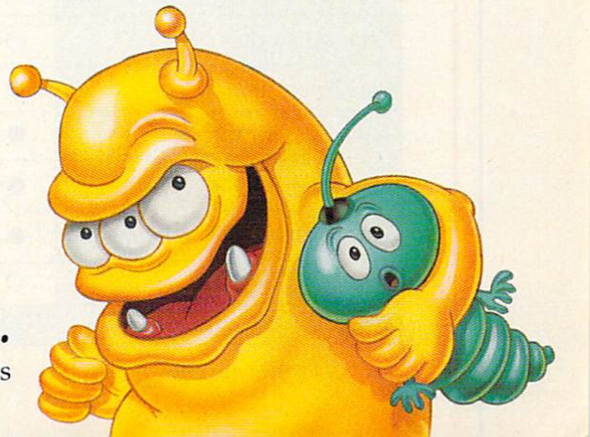
Order Toll Free
(800) 545-7677 or (310) 793-0600

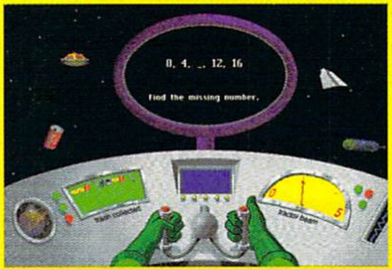
Suggested retail price:
$59.95 MS-DOS

Available at Babbage's, Best Buy, CompUSA, Egghead Software, Electronics Boutique, Software Etc. and other fine retailers.

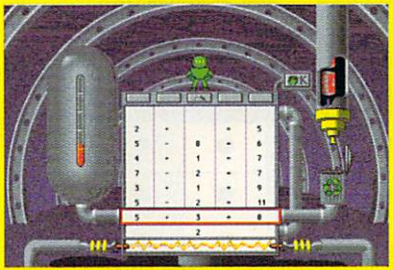
Davidson.
Teaching Tools From Teachers

Circle Reader Service Number 151

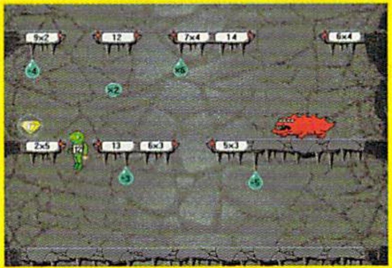




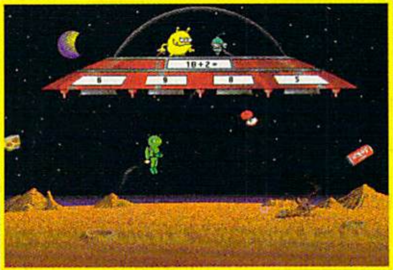
Oh no! The Trash Alien has captured Spot and left behind a trail of litter. In Trash Zapper, your mental math skills are needed to help clean up the mess.



The *Number Recycler* can convert trash into fuel but Blasternaut needs your problem-solving abilities to make it work. Recycle all the trash and you're ready to go!



You've tracked the Trash Alien to his home planet. But you haven't saved Spot yet! Use your mental math skills to help Blasternaut calculate his way through the *Cave Runner* game.



Finally, Blasternaut and the Trash Alien are face to face in the *Math Blaster* game. It's a battle of the numbers and Spot's fate is in your hands—good luck!

nice artwork.

All the usual tools, such as lines, boxes, and circles, are there—even a magnifying tool! The ability to rotate your fax might be just what you need if you'd like to send the information in landscape mode instead of portrait. You can also view multiple pages to get a sense of what the entire fax looks like.

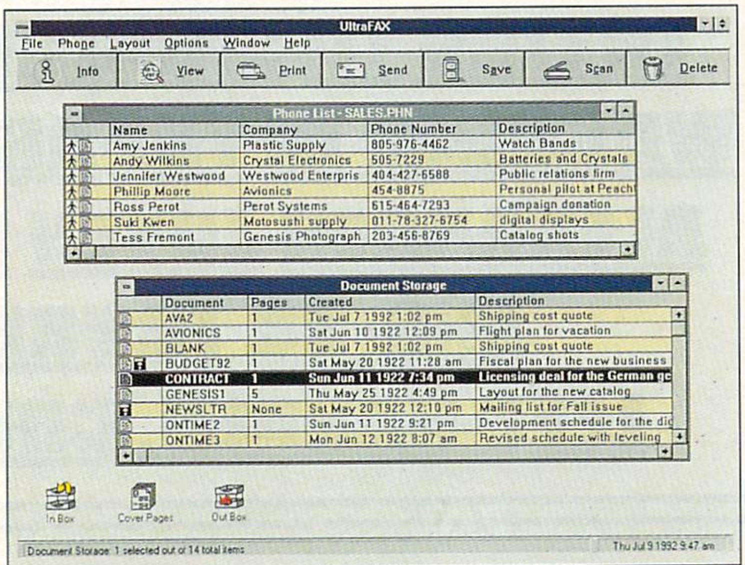
Several of the packages in this month's roundup had an irritating habit of taking control for seconds at a time, and UltraFax was no exception. A number of times, I'd start clicking in other windows; when nothing happened, I couldn't resist the compulsion to click some more. By the time Windows regained control, there were enough mouse events in the queue to really mess things up. Many times the result was a com-

COMPUTE'S Fax Software Test Lab	BitFax Easy	DataFAX 4.01	Delrina WinFax Pro 3.0	Eclipse FAX with OCR 1.21	FaxMaster	FaxWorks Pro 3.0	Intel FAXability Plus/OCR	QuickLink Gold 1.1	RapidFAX Gold 2.10	UltraFax 1.1
Background receiving	●	●	●	●	●	●	●	●	●	●
Background sending	●	●	●	●	●	●	●	●	●	●
Receive directly to printer	○	●	●	●	●	●	○	●	●	●
Class 1 compatible	●	●	●	●	●	●	●	●	●	●
Class 2 compatible	●	●	●	●	●	●	●	●	●	●
Driver for application printing to fax	●	●	●	●	●	●	●	●	●	●
Custom cover pages	○	●	●	●	○	○	●	●	●	●
Scheduling delayed fax transmissions	●	●	●	●	●	●	●	●	●	●
OCR	●	●	●	●	●	●	●	●	●	●
Scanner support	○	●	●	●	●	●	●	○	●	●
Built-in phone list	●	●	●	●	●	●	●	●	●	●
Import/export phone list	○	●	●	●	○	●/○	○	○	○	●
Automatic fax cleanup	○	○	●	○	○	○	○	○	○	●
Change window colors	○	○	○	○	○	○	○	●	○	●
Fax viewer	●	●	●	●	●	●	●	●	●	●
Automatic reception	●	●	●	●	●	●	●	●	●	●
Manual reception	●	●	●	●	●	●	●	●	●	●
Transmission of attached files	●	○	●	○	●	○	○	○	●	●
Graphical fax-editing tools	○	●	●	●	○	○	○	○	○	●

● = yes ○ = no

SPEAK UP!

Is there a group of hardware or software products you'd like to see covered in an upcoming Test Lab? Let us know by calling **(900) 884-8681, extension 7010102** (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone.



Phone List - SALES.PHN

Name	Company	Phone Number	Description
Amy Jenkins	Plastic Supply	805-976-4462	Watch Bands
Andy Wilkins	Crystal Electronics	505-7229	Batteries and Crystals
Jennifer Westwood	Westwood Enterpris	404-427-6588	Public relations firm
Phillip Moore	Avionics	454-8875	Personal pilot at Peach
Ross Perot	Perot Systems	615-464-7293	Campaign donation
Suki Kwen	Motosushi supply	011-78-327-6754	digital displays
Tess Fremont	Genesis Photograph	203-456-8769	Catalog shots

Document Storage

Document	Pages	Created	Description
AVA2	1	Tue Jul 7 1992 1:02 pm	Shipping cost quote
AVIONICS	1	Sat Jun 10 1922 12:09 pm	Flight plan for vacation
BLANK	1	Tue Jul 7 1992 1:02 pm	Shipping cost quote
BUDGET92	1	Sat May 20 1922 11:28 am	Fiscal plan for the new business
CONTRACT	**1**	**Sun Jun 11 1922 7:34 pm**	**Licensing deal for the German ge**
GENESIS1	5	Thu May 25 1922 4:49 pm	Layout for the new catalog
NEWSLTR	None	Sat May 20 1922 12:10 pm	Mailing list for Fall issue
ONTIME2	1	Sun Jun 11 1922 9:21 pm	Development schedule for the dig
ONTIME3	1	Mon Jun 12 1922 8:07 am	Revised schedule with leveling

Document Storage: 1 selected out of 14 total items

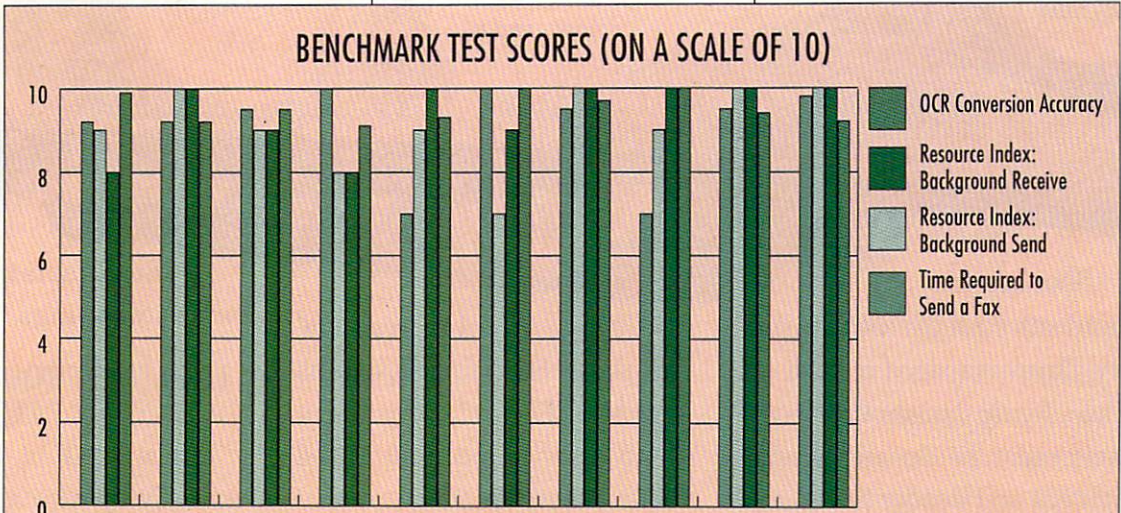
Thu Jul 9 1992 9:47 am

pletely rearranged desktop. After I figured out what had happened, it wasn't much of a problem. But during background operations, you'll have to watch out so that inadvertent clicks and keypresses don't do something you hadn't intended.

As you probably know, Windows applications all compete for processor time. For this reason, I had to be careful while using other applications during background sends to avoid stealing too much processor time. On rare occasions, the remote fax machine interpreted a delay as a transmission error and hung up. The problem was worst when I had so many applications loaded that Windows did a lot of swapping to disk. Except for those rare occasions, though, UltraFax sent and received without a hitch.

Overall, this is a fine piece of software. A well thought-out interface makes this capable program easy to use and worthy of your consideration.

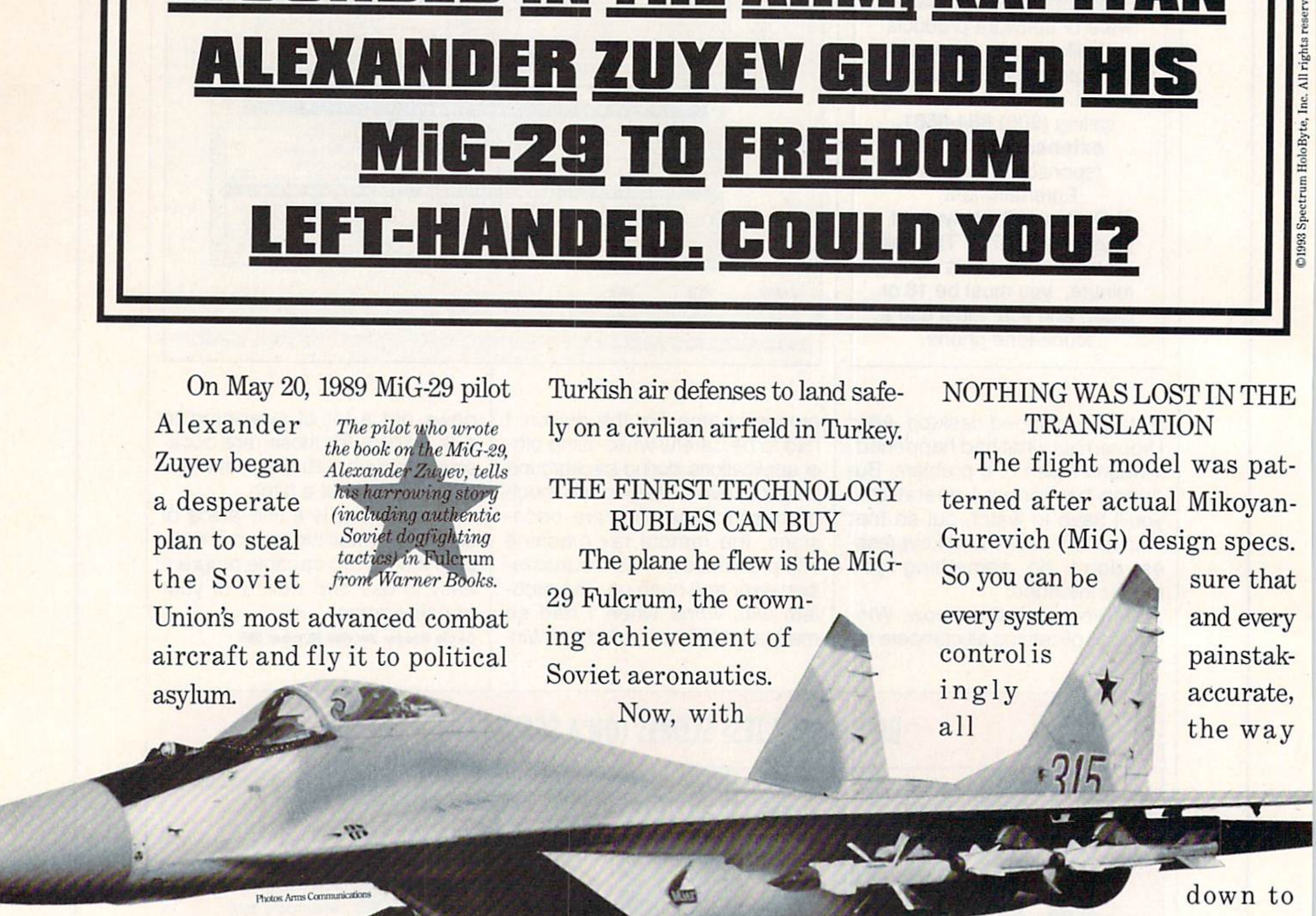
Circle Reader Service Number 380



.95 MACH, NINETY FEET ABOVE THE GROUND, BOTH SIDES TRYING TO SHOOT HIM DOWN. WOUNDED IN THE ARM, KAPITAN ALEXANDER ZUYEV GUIDED HIS MiG-29 TO FREEDOM LEFT-HANDED. COULD YOU?

On May 20, 1989 MiG-29 pilot Alexander Zuyev began a desperate plan to steal the Soviet Union's most advanced combat aircraft and fly it to political asylum.

The pilot who wrote the book on the MiG-29, Alexander Zuyev, tells his harrowing story (including authentic Soviet dogfighting tactics) in Fulcrum *from Warner Books.*



Photos: Arms Communications

Shot in a life and death struggle with the sentry, Zuyev managed to take off. Then, flying dangerously low to avoid radar, he eluded pursuing fighters and deadly Soviet and Turkish air defenses to land safely on a civilian airfield in Turkey.

THE FINEST TECHNOLOGY RUBLES CAN BUY

The plane he flew is the MiG-29 Fulcrum, the crowning achievement of Soviet aeronautics.

Now, with *MiG-29: Deadly Adversary of Falcon 3.0,*™ Spectrum HoloByte's add-on to *Falcon*® *3.0,* you can climb into the cockpit of the F-16's nemesis.

NOTHING WAS LOST IN THE TRANSLATION

The flight model was patterned after actual Mikoyan-Gurevich (MiG) design specs. So you can be sure that every system and every control is painstakingly accurate, all the way down to the Russian-accented cockpit warnings.

IT'LL TEST YOUR SKILL AND YOUR PATRIOTISM

Unlike the F-16, the MiG-29 isn't a fly-by-wire aircraft, so a

For Visa/MasterCard orders call 24 hours a day, 7 days a week: (800) 695-GAME.
For technical questions call (510) 522-1164 (M-F: 9AM-5PM Pacific Time).

©1993 Spectrum HoloByte, Inc. All rights reserved. All trademarks are the property of their respective owners.

computer never limits your control inputs, whether inspired or foolish. Its twin Isotov RD-33 engines produce 36,600 lbs. of thrust, to the F-16's 25,000. And superb aerodynamics make it controllable at low speeds and high angles of attack that would have enemy pilots fighting to avoid a spin.

The most fearsome opponent is a human one. With EBS, up to six players can go head-to-head.

THEY WON'T EVEN KNOW WHAT HIT THEM

Your MiG's IRST (Infrared Search and Track) system can track an F-16 without revealing your presence on his threat display. So you can get on his six o'clock before he even knows you're there. Once in range, you'll be able to lock on to the Falcon just by turning to look at him with the MiG-29's helmet mounted sight. Then call "pusk" (launch) as you fire missiles or "ogon" (firing) as you ventilate him with your computer-accurate 30mm gun. Either way, his plane will make a satisfying crunch when it hits the ground.

Next time you have an F-16 glued to your tail, try the MiG-29's "Cobra" maneuver.

1) You pull up past a 90 alpha climb.

2) Your airspeed drops rapidly; the F-16 zooms past.

THE ELECTRONIC BATTLEFIELD SERIES: THE ULTIMATE CYBER-BATTLEFIELD

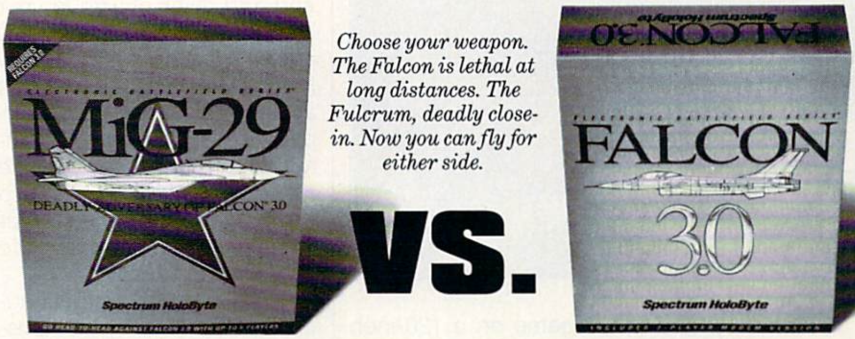
EBS is the first series of interconnecting simulations. Each title works with the others to bring you closer to the real thing.

Now you can choose from multiple aircraft, multiple theaters, even which side of the conflict to fight on. And you can go head-to-head over a modem or with up to six players over a network. It all begins when you add on *MiG-29* to *Falcon 3.0.*

Anything more realistic wouldn't be a simulation.

3)You abruptly pitch the nose back to level flight. Now you're on his six, with a little score to settle.

INTRODUCING MiG-29



Choose your weapon. The Falcon is lethal at long distances. The Fulcrum, deadly close-in. Now you can fly for either side.

MiG-29 *add-on requires* Falcon® 3.0. *Available on IBM compatibles.*

Spectrum HoloByte

MiG-29
FALCON
FALCON 3.0
FIGHTER AIR COMBAT TRAINER

ELECTRONIC BATTLEFIELD SERIES®

The fight of your life.

Circle Reader Service Number 201

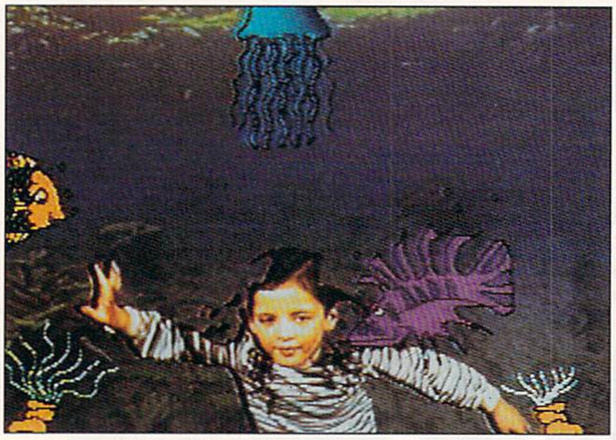
NEWS & NOTES

Jill Champion Booth

VR for Kids

If you happen to be near a family amusement center sometime soon, look for an InVideo system and give your kids a chance to experience a touch of virtual reality. InVideo is the first peripheral-free VR system for the entertainment industry—and it's specifically for kids. Forgoing the standard helmet which creates a 3-D effect that immerses you in the environment, InVideo is more like a mirror world in 2-D, where the player's live video image is captured by a camera, transferred digitally, and projected into the game on a 120-inch TV screen. Choosing a game is as simple as pointing to and "pressing" the image of a button. Kids can opt to pop balloons while flying over treetops, tickle fish while swimming underwater, juggle planets and asteroids while soaring through outer space, or dodge raining cats and dogs. Every move a player makes interacts with the graphics onscreen.

Kids watch themselves interact with virtually real surroundings when playing the InVideo system at amusement centers and museums.



InVideo creator Dean Friedman also designed the first virtual-reality TV show for Nickelodeon, "Eat-a-Bug," and has designed numerous games for the Nickelodeon kids' show "Nick Arcade."

And although this system is fairly basic compared to virtual reality as portrayed in science-fiction movies and on TV, Friedman expects an InVideo upgrade once a year. A haunted-house version is in the works.

InVideo systems are also featured in numerous museums around the world, including the Brooklyn Children's Museum in Brooklyn, New York; the Franklin Institute in Philadelphia, Pennsylvania; the Laredo Children's Museum in Laredo, Texas; the North Carolina Museum of Life and Science in Durham, North Carolina; and the Eureka! Children's Museum in Halifax, England.

Cool Sound

Speakers for your PC don't have to take up a lot of room and add miles of wire to your already-tangled cable web. The MM-1, part of IBM's new Plug 'n Run series of modules and monitors, is a slim, low-profile sound unit that fits neatly under your monitor. Inside the compact case are two five-watt speakers that deliver sound to please even the most demanding ears.

The MM-1 works with all audio cards and features industry-standard RCA connectors, so there's no clutter, no desk space wasted, no mixed-up cable connections, and no compatibility confusion. Set the MM-1 under your monitor, plug it in, and enjoy.

Other features include a built-in microphone and input and output jacks for accessories (stereo headphones, auxiliary microphone, video, and audio).

Controls for volume, tone, and balance are located on a pop-up panel in the front of the unit.

The 9.2-pound MM-1 supports monitors weighing up to 90 pounds. Suggested retail price is $187.

Setting the Tone

If the idea of buying a laser printer cartridge that's discounted 15 to 20 percent below discount-store prices and contains 20 percent *more* toner than standard cartridges appeals to you—and it should—then you'll also like the idea of getting back $5 plus your shipping costs when you return your cartridges to the company for recycling.

Remanufactured is the keyword here, and Laser-Pro, an Illinois company, has developed a technique to remanufacture laser cartridges without toner leakage. The company can package the cartridges and ship them to customers nationwide.

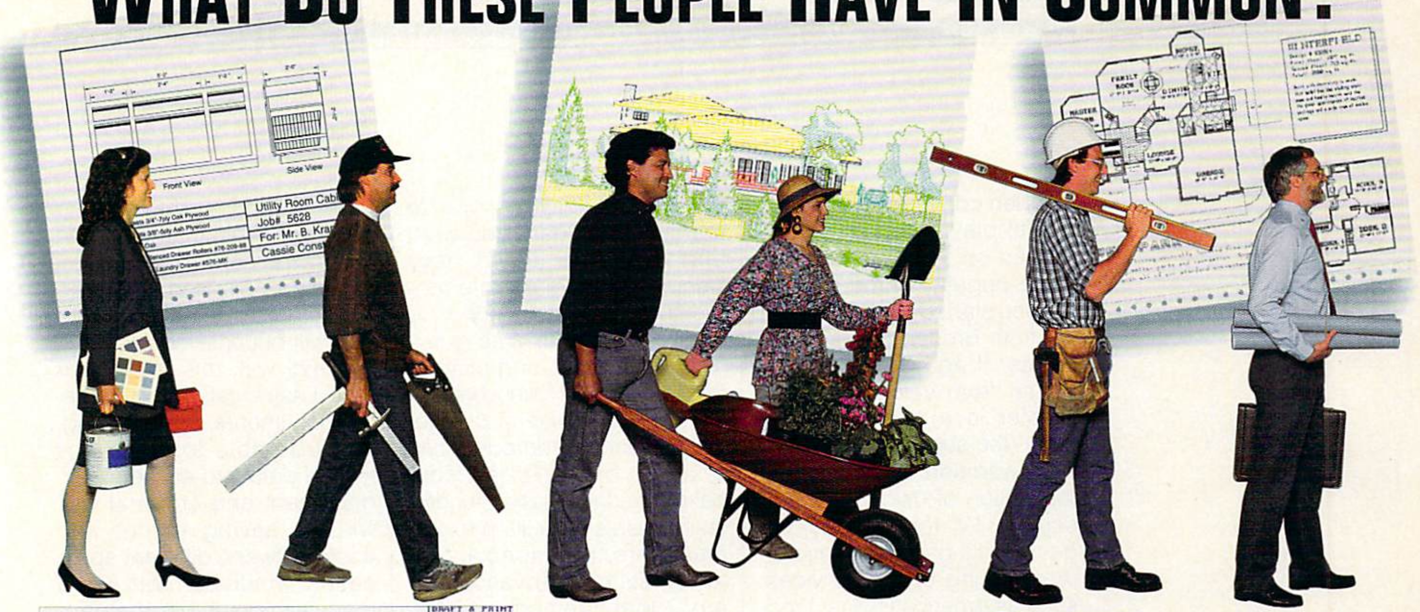
Although recycling laser printer cartridges is nothing new, traditionally there have been problems with the toner leaking, confining remanufacturers to selling only locally—where they can hand-deliver the product. According to Laser-Pro, although the cartridge-remanufacturing industry comprises some 3000 small companies, about 95 percent of the firms do business within a 25- to 30-mile radius of their home bases. Not so for Laser-Pro and its cross-country business.

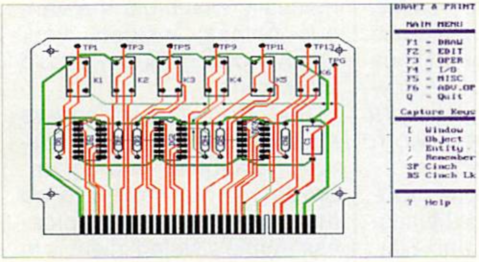
If you prefer to buy new, you can still buy new cartridges from Laser-Pro at 5 to 10 percent less than imported brands. But considering the environmental advantages—not to mention the savings—of buying the remanufactured ones, why would you want to? For more information and pricing, contact Laser-Pro, 675 East Irving Park Road, Roselle, Illinois 60172; (800) 377-0551, (708) 893-2362 (fax).

Big-Screen Game Playing

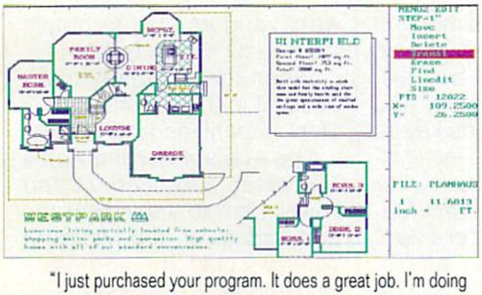
Guaranteed to turn your living room into a game room, Game Blaster from Advanced Digital Systems is a new PC-

WHAT DO THESE PEOPLE HAVE IN COMMON?

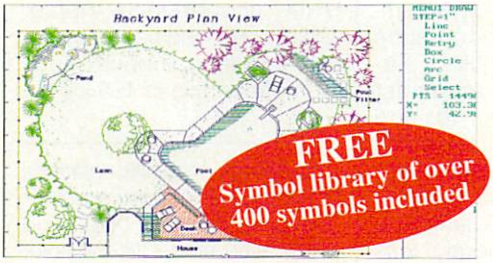

Front View
Side View
Utility Room Cab
Job# 5628
For: Mr. B. Kra
Cassie Cons


DRAFT & PRINT
MAIN MENU
F1 = DRAW
F2 = EDIT
F3 = OPER
F4 = I/O
F5 = MISC
F6 = ADV.OP
Q = Quit
Capture Keys
I Window
O Object
: Entity
/ Remember
SP Cinch
BS Cinch Lk
? Help

DRAFT & PRINT is an excellent choice for all but the most complicated projects. — *PC Home Journal September 1992*


WINTERFIELD
WESTPARK
FILE: PLANHAUS

"I just purchased your program. It does a great job. I'm doing a building remodeling and design plan, and it works well."
—*Nicholas Spagnola York, PA*


Backyard Plan View
Pond
Lawn
Pool
House

FREE
Symbol library of over 400 symbols included

DRAFT & PRINT... isn't limited to any particular category of projects. —*LA Times July 16, 1992*

DRAFT & PRINT™

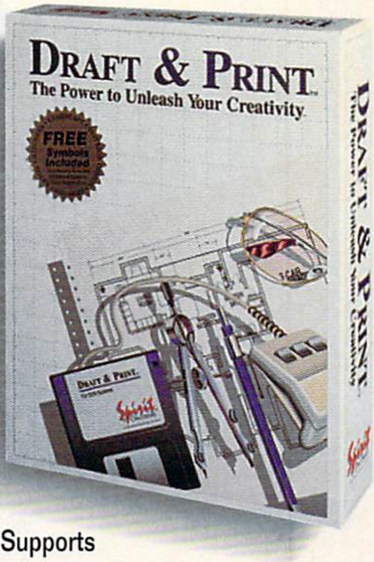
THE DESIGN-IT-YOURSELF SOFTWARE FOR THE DO-IT-YOURSELFER

☐ SIMPLE TO INSTALL

Draft & Print was created so that you spend more time designing than figuring out where to begin. You can create, edit, and print scaled drawings of: floor plans, landscaping, elevations, woodworking, architecture, mechanical, electronic schematics, printed circuit boards and more. It even imports and exports to other graphic programs such as AutoCAD!

☐ SIMPLE TO USE

Completely voice-assisted. Draft & Print comes with 5 tutorials and on-screen help. It includes full scaling, editing, rotation, full color control, layering, area calculations and auto-dimensioning.


DRAFT & PRINT
The Power to Unleash Your Creativity
FREE Symbols Included
Spirit

☐ SIMPLY TERRIFIC

Draft & Print is the perfect design tool for CAD users at any level of expertise. Whether you're designing a landscaping plan, a new dream home or a TV entertainment center for your living room, you'll find Draft & Print is the ultimate design tool.

☐ SIMPLY THE ONE TO BUY

Works on IBM and 100% compatible PC's. Supports CGA/EGA/VGA and Hercules monochrome monitors; laser printers, plotters and high res. output to dot matrix printers.

Spirit of Discovery
GAMETEK
A publishing partnership

ORDER TODAY BY CALLING 800-722-8988

Visa and MasterCard accepted. Spirit of Discovery, 5421 Avenida Encinas, Carlsbad, CA 92008

Circle Reader Service Number 154

to-video converter that allows you to play your favorite PC games on TV. Bundled with three popular game titles to get you started—Prince of Persia from Brøderbund and Jet Fighter II and Spectre Challenger from Velocity—Game Blaster is a great value at $169 (the suggested price).

In addition to giving you the option of using your big-screen TV for favorite PC games, it's great for those already using online services, such as America Online, Prodigy, or CompuServe. (COMPUTE and Omni Magazine Online would look great on the TV.) Game Blaster is compatible with all DOS applications, supports 640 × 480 VGA resolution in 256 colors, and outputs NTSC video in RCA composite and Super VHS super-video standards. For more information, contact Advanced Digital Systems, 20204 State Road, Cerritos, California 90701; (800) 888-5244, (310) 809-6144 (fax).

Sound for even the most discerning ears comes from the neat, compact MM-1, part of IBM's Plug 'n Run series of PC peripherals.

Your World Series

Keith Hernandez, Ty Cobb, Willie Mays, and Shoeless Joe Jackson—all on the same team? What a lineup—and what a game that would have been—and *can* be with Baseball for Windows from Miller Associates. Using the most complete and accurate baseball statistics, Baseball for Windows allows you to manage any team you want and see what could have been some remarkable moments in playing history.

Bringing the all-time greatest teams, fields, and plays to life, Baseball for Windows features a storehouse of play results, stunning reproductions of actual ballparks, an icon-based interface, easy-to-understand displays, built-in micro-managers, and special features—such as Advanced Injury Management (AIM), which provides more-realistic electronic playing conditions by tracking the status of players and determining if they're rested, tired, bushed, worn out, itchy, or benched.

The program's four modules (Baseball, League Manager, Advanced Draft, and StatMaster) give you instant access to every aspect of baseball. Click on the picture of the guy stealing, and he'll go; click on a player's name, and his past and current game performance will be displayed. Special bench and bullpen reports provide key information so you can make informed playing decisions. For more information, contact Miller Associates, 11 Burtis Avenue, Suite 200, New Canaan, Connecticut 06840; (203) 972-0777, (203) 966-7547 (fax).

Future Standards

The framework of today's computing world encourages what has become quite a paradox: Developers are under constant pressure to add more features to their products; and as applications become more powerful, they also become more difficult to use, and consequently, less useful to people.

Apple Computer hopes to change all of that next year when it introduces a new computer architecture, called OpenDoc, that will integrate software and enable sharing across multiple platforms and distributed networks. In fact, if all goes as planned, the desktop computer as we know it today will become obsolete.

What will this mean for you? Easy creation of multimedia documents, for one thing. You'll be able to place any kind of data into an OpenDoc document and edit it at will, without having to cut and paste between different application windows. You won't manually assemble the various pieces; instead, your OpenDoc document will hold all of them.

OpenDoc parts will behave much like current applications, enabling you to upgrade without having to go through a new learning process. Apple's stated intent is to make this technology not only cross-platform but also truly open—with both systems vendors and independent software vendors able to obtain the source code easily.

When the company introduces it in the second half of 1994, OpenDoc architecture will be available for the Apple Macintosh. WordPerfect and Novell plan to implement the architecture on the Microsoft Windows platform, and since it's designed to be highly portable, OpenDoc will probably become available on other desktop systems such as UNIX, according to Apple. IBM and Borland have also announced their support. Look for more on this in 1994.

Companies or public relations firms with items suitable for "News & Notes" should send information along with a color slide or transparency to News & Notes, Attention: Jill Champion Booth, COMPUTE, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. ❐

FEEDBACK

Choosing a cache, picking a printer port, acknowledging the Amiga, licking the lottery, and mailing to Maxtor

Take the Cache

Your answer to Fred Bell (May 1993) was wrong concerning cache memory. You said it cached information from the hard disk, but the cache associated with CPUs is processor cache, not disk cache. Processor cache is a bank of external high-speed memory—typically 15- to 20-ns. This bank stores the most recent of the most often accessed areas of RAM, determined by a set of algorithms and the way the cache is designed. Additionally, every Intel 486 CPU has an 8K internal processor cache built into the chip. When a system is advertised with 8K of cache, it's this internal cache that's being referenced. It doesn't represent added value.

A processor cache makes a huge difference in CPU performance just as a disk cache makes a huge difference in disk performance. DOS-based 386 and 486 computers would see this performance increase with just 64K of external cache memory, while these same computers based on 32-bit operating systems such as OS/2 or Windows NT should have 256K of external processor cache to see the biggest performance boost.

You should also clarify to readers that 256K would be a rather small disk cache. My experience has shown that a disk cache between 1MB and 2MB provides the largest increase in disk performance. A cache larger than 2MB is more or less a waste of memory.

One more point: Some game programs that use expanded memory assume that you don't have a disk cache on your system and set up their own disk cache. Running two active disk caches at the same time can severely degrade the performance of your entire system. In these cases, I recommend that you disable your system's disk cache and let the game program do the work.

JOSEPH G. SAWAYA
SLIPPERY ROCK, PA

Thank you for your correction, your clarification, and your tip.

Continuing Series

Could you please explain to me the difference between a parallel and serial port for printers and other devices? Is there an advantage in using a serial connector rather than a parallel connector?

RANDY BRAZEAU
RIDGEVILLE, ON

A serial connector sends one bit at a time down a single wire. A parallel connector can send whole bytes at a time. The serial connector is more appropriately used in applications where the output will be traveling down a single pair of wires, such as a telephone wire, or where the receiving device handles your data very slowly, such as a printer.

Serial cables have more than one pair of wires, though, which allows a manufacturer to transmit important information quickly back and forth between the computer and the peripheral. That's why, when you're working with a Mac and a LaserWriter and the LaserWriter encounters a problem, the Mac can tell you the exact nature of the problem.

Until recently, parallel cables were one-way. They sent information relatively quickly, but when there was a problem at the other end of the cable, all your computer could tell you was that the output device was no longer accepting data. On the far end of the cable, the printer might be out of paper, jammed, or on fire; your computer wouldn't have a clue. A new parallel cable specification changes all of that, granting intelligence to the connector. A collection of codes can keep the computer (and you) informed about the progress on the other end of the cable.

In summary, you'll find approximately equivalent printer performance with either a parallel or a serial printer because the printer is the bottleneck, not the interface. A serial printer has the slight advantage of offering two-way communication, but parallel printers will soon share that advantage. A parallel interface has the advantage of being by far the most common used by printers. And, finally, with serial mice and modems becoming more and more common, most people can't afford to sacrifice one of their two precious serial ports to a printer cable.

Amiga Notes

I read with interest the special section on PCMCIA slots in the May 1993 issue (not available in all editions). Despite the depth of the article, there was not a single word about the fact that the Amiga 600, 1200, and 4000 all come equipped with standard PCMCIA slots.

ERIC NIXON
FOREST, ON

Just about every time we showcase a bit of new technology for the PC, we receive a handful of letters from Amiga owners with the general theme of "You talk about this new technology of (fill in the blank), but it's not new. It's been available for almost a decade on the Amiga." So, as a service to our readers, we will pause now to praise the Amiga. Virtually every advance that you read about for the PC was built into the Amiga: sound, an-

imation, multitasking, and so forth. Commodore has a team of very forward-looking engineers, and it builds one of the most capable desktop machines in the world. COMPUTE has long admired the Amiga (and the pioneer spirit of Amiga owners) and has prided itself on being the mainstream computer magazine that has paid the most attention to the Amiga over the years. If this sounds a bit like a eulogy, it is because, after several years of publishing first a quarterly magazine, then a bimonthly magazine, and later a monthly section of COMPUTE devoted to the Amiga, we have ceased our regular coverage of the machine as of October 1993.

The Lottery

I have written a small program to pick a group of six numbers ten times for the state lottery. The program doesn't seem to work.

LARRY RAY
ALICE, TX

In the interest of scientific inquiry, we will overlook our moral objections to gambling. Sometimes it helps to state in specific terms what you want a program to do before you write it. You want to draw six random numbers from among the numbers 1–50. The six numbers all have to be different from one another. If you select a number once, it shouldn't be selected again in any group of six. And you want to generate ten of these groups of six. Although you could accomplish this in several different ways, the following program demonstrates what is probably the most efficient way. We'll create a collection of numbers (1–50), scramble them, draw the first six numbers, scramble them again, draw six more, and so forth. Here's the program. Remember that in order to get a winning number, you have to avoid thinking about an elephant when the program completes its operation.

```
DIM A(50)
RANDOMIZE TIMER
FOR I = 1 TO 50
A(I) = I
NEXT
FOR J = 0 TO 9
GOSUB SCRAMBLE
GOSUB DRAWSIX
NEXT
PRINT "Don't think
  about an elephant." END

SCRAMBLE:
SCRAMBLE = RND * 1000 + 100
FOR I = 0 TO SCRAMBLE
RESCRAMBLE:
A = INT(RND * 50) + 1: B =
  INT(RND * 50) + 1: IF A = B
  THEN GOTO RESCRAMBLE
A1 = A(A): A(A) = A(B): A(B) = A1
NEXT
RETURN

DRAWSIX:
FOR I = 1 TO 6
PRINT USING "## "; A(I);
NEXT
PRINT
RETURN
```

To the Max

I have a question concerning my Maxtor 200MB IDE hard disk. Do you have the address for Maxtor?

DON SHAW
LUSBY, MD

The address for Maxtor Colorado is 2190 Miller Drive, Longmont, Colorado 80501. Its telephone number is (303) 651-6000, or (800) 262-9867 outside of Colorado. Though it's a separate company, Maxtor supports Miniscribe drives. Incidentally, our source for many names and addresses is the 1993 Computer Marketplace, *an unusually complete reference, published by Random House Electronic Publishing.*

Do you have a question about hardware or software? Or have you discovered something that could help other PC users? If so, we want to hear from you. Call our special "Feedback" line: (900) 884-8681, extension 7010201 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Or write to "Feedback" in care of this magazine. Readers whose letters or calls appear in "Feedback" will receive a free COMPUTE baseball cap while supplies last. We regret that we cannot provide personal replies to technical questions. ❐

EDITORIAL
Editor Clifton Karnes
Art Director Robin C. Case
Managing Editor David English
Features Editor Robert Bixby
Reviews Editor Mike Hudnall
Gazette Editor Tom Netsel
Entertainment Editor Denny Atkin
Senior Copy Editor Karen Huffman
Copy Editor Margaret Ramsey
Editorial Assistant Polly Cillpam
Contributing Editors Sylvia Graham, Eddie Huffman, Tony Roberts, Karen Siepak
Interns Phillip Morgan, Lisa Young

ART
Assistant Art Director Kenneth A. Hardy
Designer Katie Murdock
Copy Production Manager Terry Cash

PRODUCTION
Production Manager De Potter
Traffic Manager Barbara A. Williams

PROGRAMMING & ONLINE SERVICES
Manager Troy Tucker
Programmers Bruce M. Bowden
Steve Draper
Bradley M. Small

ADMINISTRATION
President, COO Kathy Keeton
Executive Vice President, Operations William Tynan
Editorial Director Keith Ferrell
Operations Manager David Hensley Jr.
Office Manager Sybil Agee
Sr. Administrative Assistant Julia Fleming
Administrative Assistant Lisa G. Casinger
Receptionist LeWanda Fox

ADVERTISING
Vice President, Associate Publisher Peter T. Johnsmeyer
(212) 496-6100

ADVERTISING SALES OFFICES
East Coast: Full-Page and Standard Display Ads—Peter T. Johnsmeyer, Chris Coelho; COMPUTE Publications International Ltd., 1965 Broadway, New York, NY 10023; (212) 496-6100. Southeast—Harriet Rogers, 503 A St., SE, Washington, D.C. 20003; (202) 546-5926. Florida—J. M. Remer Associates, 3300 NE 192nd St., Suite 192, Aventura, FL 33180; (305) 933-1467, (305) 933-8302 (FAX). Midwest—Full-Page and Standard Display Ads—Starr Lane, National Accounts Manager; 7 Maywood Dr., Danville, IL 61832; (217) 443-4042, (217) 443-4043 (FAX). Detroit—Jim Chauvin, 1400 N. Woodward Ave., Suite 101, Bloomfield Hills, MI 48304; (313) 433-1016; (313) 433-1201 (Fax); Northwest—Jerry Thompson, Jules E. Thompson Co., 1290 Howard Ave., Suite 303, Burlingame, CA 94010; (415) 348-8222. Lucille Dennis, (707) 451-8209. Southwest—Howard Berman, 6728 Eton Ave., Canoga Park, CA 91303; (818) 992-4777. Product Mart Ads—Lucille Dennis, Jules E. Thompson Co., 1290 Howard Ave., Suite 303, Burlingame, CA 94010; (707) 451-8209. U.K & Europe—Beverly Wardale, Flat 2, 10 Stafford Terrace, London W87 BH, England; 011-4711-937-1517. Japan—Intergroup Communications, Ltd.; Jiro Semba, President; 3F Tiger Bldg. 5-22 Shiba-koen, 3-Chome, Minato ku, Tokyo 105, Japan; 03-434-2607. Classified Ads—Maria Manaseri, 1 Woods Ct., Huntington, NY 11743; (TEL/FAX) (516) 757-9562.

THE CORPORATION
Bob Guccione (chairman and CEO)
Kathy Keeton (vice-chairman)
David J. Myerson (president and CEO)
William F. Marlieb (president, marketing, sales and circulation)
Patrick J. Gavin (senior vice president and CFO)
Richard Cohen (executive vice president and treasurer)
Frank DeVino (executive vice president, graphics director)
Jim Martise (executive vice president, circulation)
Jeri Winston (executive vice president, corporate services)
Hal Halpner (vice president, director of manufacturing)
William Tynan (vice president, technology and information services)

ADVERTISING AND MARKETING
Sr. VP/Corp. Dir., New Business Development: Beverly Wardale; VP/Dir., Group Advertising Sales: Nancy Kestenbaum; Sr. VP/Southern and Midwest Advertising Dir.: Peter Goldsmith. Offices: New York: 1965 Broadway, New York, NY 10023-5965, Tel. (212) 496-6100, Telex 237128. Midwest: 111 East Wacker Dr., Suite 508, Chicago, IL 60601; (312) 819-0900. (312) 819-0813 (FAX). South: 1725 K St. NW, Suite 903, Washington, DC 20006, Tel. (202) 728-0320. West Coast: 6728 Eton Ave., Canoga Park, CA 91303, Tel. (818) 992-4777. UK and Europe: Flat 2, 10 Stafford Terrace, London W87 BH, England; Tel. 011-4711-937-1517. Japan: Intergroup Jiro Semba, Telex J25469IGLTYO. Fax 434-5970. Korea: Kaya Advtsng., Inc., Rm. 402 Kunshin Annex B/D 251-1, Dohwa Dong, Mapo-Ku, Seoul, Korea (121), Tel. 719-6906, Telex K32144Kayaad.

ADMINISTRATION
Sr. VP, CFO: Patrick J. Gavin; EVP/Corporate Services: Jeri Winston; VP Director Sales Promotions: Beverly Greiper; Dir. Newsstand Circulation: Paul Rolnick; Dir., Newsstand Operations: Joe Gallo; Dir. Subscription Circulation: Beatrice J. Hanks; VP Director of Research: Robert Rattner; Advertising Production Director: Charlene Smith; Traffic Dir.: William Harbutt; Dir., Budget and Finance: Tom Maley; Production Mgr.: Tom Stinson; Asst. Production Mgr.: Nancy Rice; Mgr., International Div.: George Rojas; Exec. Asst. to Bob Guccione: Diane O'Connell; Special Asst. to Bob Guccione: Jane Homlish.

SAN FRANCISCO

SCENERY FOR
MICROSOFT® FLIGHT SIMULATOR® v.5.0
FOR DOS SYSTEMS

PHOTO-REALISTIC
SCENERY OF SAN FRANCISCO BAY
AND SURROUNDING AREA

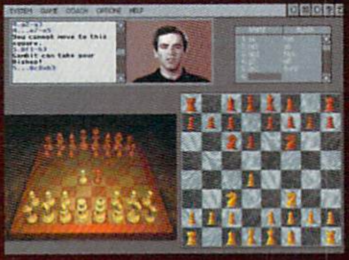
For more information or to order call
1-800-WEB-FEET

© 1993 Mallard Software, Inc.

Mallard™

Circle Reader Service Number 199

To read Kasparov's mind,
simply refer to the second board.

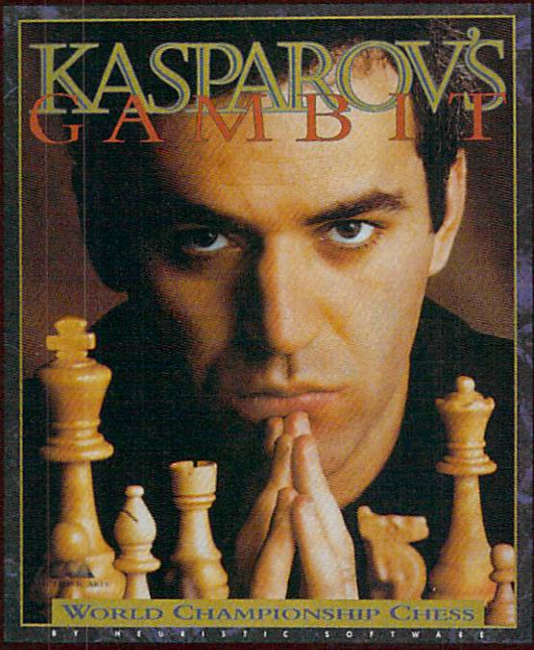


You cannot move to this square.

Gambit can take your Bishop!

[BEFORE]

Ready to raise your game to a higher level, are you? Meet Garry Kasparov, reigning king of the chess world. And your new private tutor.



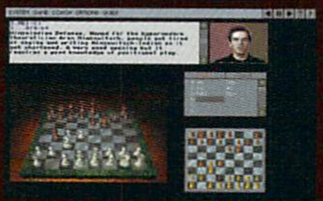
While you play Kasparov's Gambit, **his digitized image and voice** (Russian accent and all) will appear on your screen. He'll warn you of imminent danger. Question the tactics you use. And constantly challenge you to seek out fresher and deadlier lines of attack.

There's even **a second board,** which allows you to **visualize the strategies** Kasparov suggests. You can also customize most aspects of your opponent's game, giving you a virtually **infinite pool of challengers.**

To make sure you don't outgrow Gambit any time soon, we power it with the very same engine that **won** the 1993 International Computer Chess **Championship.** Not exactly what you'd call a pushover. So pick it up. Play it. And who knows?

After spending a few weeks or so learning the ropes from Kasparov, you may just find that you're finally ready to take on, well, Kasparov.

[AFTER]



As you improve, you can customize
opponents to suit your game.

Kasparov's Gambit is a trademark of Electronic Arts. ©1993 Heuristic Software. All rights reserved.

YOU DON'T BECOME WORLD CHAMPION OVERNIGHT. IT MAY TAKE YOU A COUPLE WEEKS.

Gambit's engine won the world title, so watch your step.

ELECTRONIC ARTS

Circle Reader Service Number 196

INTRODOS

Tony Roberts

DEFRAGMENTING YOUR HARD DISK

One of the new utilities provided with Microsoft's DOS 6 is Defrag. This program helps keep your hard disk in order, resulting in faster file access and an improved success rate should you ever need to undelete a file.

Why is such a utility necessary? What causes the fragmentation that Defrag was created to cure?

The culprit is DOS itself and, more specifically, the way it stores your files.

A badly fragmented hard disk degrades system performance by bogging down file access.

When you first begin storing files on a newly formatted disk, DOS places the files one after another, starting on the disk's first track. It also keeps information about where each file is stored in the FAT (File Allocation Table). As long as you only add files, your disk will be neatly organized with contiguous files stored one after the other.

However, as soon as you delete or make changes to a file, you open the door to fragmentation. DOS stores files in units called clusters, the size of which depends on the size of your disk partition. Let's say you delete a two-cluster file from your disk. DOS updates the FAT to indicate that the two clusters once occupied by that file are now available for other use.

Since DOS stores data as close to the front of the disk as possible, the next time you save a file, DOS will store it in the space left by the deleted file.

But what if the file you're storing is larger than two clusters? DOS fills the two-cluster vacancy with the beginning of the file and stores the remainder in the next available empty spaces on the disk. It keeps track of the various parts of a file through entries in the FAT. When you open a file, DOS checks the FAT to get instructions on where to find all of the file's parts and then reassembles it for you.

DOS's ability to fragment files is a good thing. Otherwise, you could face a situation in which you had 10MB remaining on your hard disk but couldn't store a 2MB file because there were no contiguous spaces larger than 1MB.

On the downside, a badly fragmented hard disk degrades system performance by bogging down file access as the drive head travels all across the disk, rounding up the scattered clusters. File fragmentation also makes it more difficult to recover deleted files using DOS's Undelete command. Undelete normally can recover an unfragmented file in a snap, but if the file is fragmented, it has to do some guesswork to reassemble the file because the road map to the file that was stored in the FAT is no longer available.

Now that we've discussed fragmentation and discovered how it happens, let's look at what to do about it. If you have DOS 6, you can use the Defrag command. If you use an earlier version of DOS, you can get a defragmentation program either separately or as part of a disk utilities package. (In fact, the defragmentation program that comes with DOS 6 is a version of a program created by Symantec, which produces the Norton Utilities.) Defrag may not have all the bells and whistles of other software, but it gets the job done.

Defrag works on one of two levels. First, it can identify all of the fragmented files on your disk and move them to areas where they will fit contiguously. Or it can rearrange the files on your hard disk so that none is fragmented and all are packed together at the front of the disk. This latter option essentially rewrites every file on your disk.

Today's defraggers have come a long way since the earliest versions, but because defragmenting involves your entire database, it's wise to take a few precautions: Have a current backup in case something goes wrong, run Chkdsk to make sure your disk has no lost clusters or file allocation errors, and disable any networks and multitasking software such as Windows or task switchers.

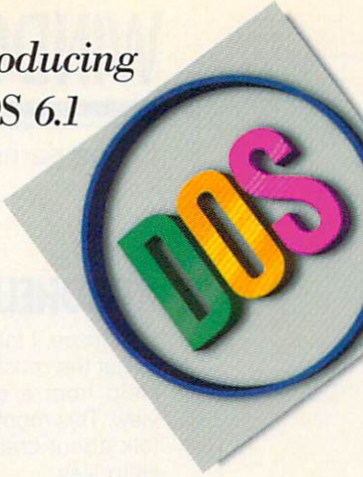
DOS 6's Defrag requires a lot of memory. If you receive *Insufficient Memory* messages, try to free up as much memory as possible by eliminating all TSRs. If memory remains a problem, borrow some memory from your graphics adapter using the following procedure: Add the parameters I=A000-BFFF and NOEMS to the CONFIG.SYS command that loads EMM386, restart the computer, and then run the defragmentation program by typing *defrag /g0*.

After Defrag has finished its work, remove the parameters you added to the EMM386 line in CONFIG.SYS.

The A000–BFFF memory range is commonly used by video cards to display graphics screens. This procedure borrows that block of memory for use by the operating system. The /g0 switch used when starting Defrag instructs the program to run in text mode rather than graphics mode, avoiding a conflict over that block of memory.

Once you get the hang of using Defrag, you can automate the process by using DOS 6's multiple configuration feature to create a setup that runs Defrag. When you do this, you can use the /b switch on the Defrag command line to cause your system to reboot itself after Defrag has finished doing its work. ❐

Introducing
PC DOS 6.1



The best utilities investment on the market.

Before you sink a penny into MS-DOS® 6, consider a better way to maximize the return on your PCs—the new PC DOS 6.1 from IBM.

It's got utilities that earn the highest rating. The automatic antivirus scan detects nearly twice as many viruses as MS-DOS, while taking up a fraction of the space (just 1K–6K, versus 7K–44K for MS-DOS).

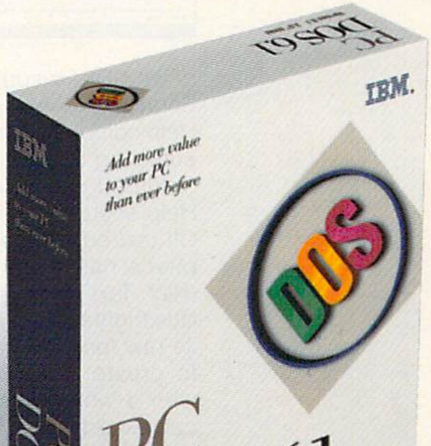
What's more, it's got utilities you don't get with MS-DOS. Such as the full-screen Program Scheduler and the Integrated E Editor. Full Screen Backup gives you differential backup of modified files, as well as incremental, tape and NetWare® file attribute backups—and it can resume interrupted backup. Also, high-speed floppy disk support is two to three times faster.

Your memory management will pay dividends, too. The Memory Optimizer not only gives you more available memory, but also a configuration watcher to help run your system more efficiently.

And you can bank on the best service and support in the business. Including a 24-hour helpline you can actually reach, and 60 days of free support.

To order PC DOS 6.1, see your local software dealer. Or call **1 800 342-6672.** (In Canada, call **1 800 465-7999.**) When you consider all the options, PC DOS 6.1 is the only one to pick.

Features and Functions	PC DOS 6.1	MS-DOS 6
Backup—Tape support;	x	
High-speed floppy disk support	x	
Approximate number of viruses that can be detected	>1,400	800
Automated system configuration optimizer	x	
PCMCIA II support	x	
Enhanced editor	x	
Program scheduler	x	



IBM®

IBM is a registered trademark of International Business Machines Corporation. MS-DOS is a registered trademark of Microsoft Corporation. NetWare is a registered trademark of Novell Corp. © 1993 IBM Corp.

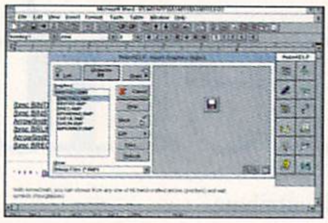
WINDOWS WORKSHOP

Clifton Karnes

ROBOHELP 2.0

Last issue, I talked about how to get the most from Windows Help from a user's point of view. This month, I'm going to talk about creating your own Help files.

Theoretically, the only tools you need to create a Windows Help file are the Help compiler (HC30.EXE or HC31.EXE) and a text editor that can produce ASCII text files, which the Help compiler reads and compiles. The Help compiler comes with most development systems, including the Windows SDK, Visual C++, and Borland C++. You also get the Help compiler with most Help-authoring tools.



With RoboHELP 2.0, creating Windows Help files is a snap.

Although you can create Help source files with an ASCII text editor, the Help compiler's native format is RTF (Rich Text Format), which is a little frightening to work with in its raw form. It's much easier to create Help source files with a word processor that can export RTF. Word for Windows has excellent RTF support (Microsoft invented RTF), and it has become the standard for Help authors.

Information on creating Help is sparse, but one excellent source is the Microsoft Help Authoring Guide, a Help file itself that explains Help file creation. It's available on the Windows SDK forum on CompuServe and on the Microsoft Developers Network CD. I haven't mentioned the MSDN CD before, but it's an indispensable tool for all Windows developers and professionals. It's a quarterly CD-ROM that boasts the entire hypertext documentation of the SDK, Visual C++, Petzold's Windows 3.1, and scores of other references. It also has lots of programs and useful information, including the Help Authoring Guide and other Help-authoring aids.

Back to creating Help. Using a word processor like Word for Windows instead of a text editor makes creating Help files easier, but it's still hard work. You have to put in the codes for topics, jumps, and graphics all by hand. And after you've saved your file, you have to compile it with the Help compiler, which, amazingly, is DOS based.

After you've gotten your feet wet with creating a few simple Help files, you'll begin to realize that this should be easier than it is.

Coming to the rescue is Blue Sky Software with RoboHELP 2.0 (619-459-6365, $495). This program is a superb tool that turns Word for Windows into a Windows-based integrated development environment for Help, much the way Visual C++ and Visual Basic are integrated development environments for programs.

Everything that has to do with Help file creation and maintenance is automated with RoboHELP. The program installs a floating toolbox in Word and adds several items to Word's menus. To build a topic, you simply click on the Topic button. The program prompts you for titles and keywords. Creating a jump is just as easy. You click on the Jump button, and RoboHELP asks you where you want to jump. Creating pop-ups is a snap, too.

RoboHELP also has excellent support for embedded graphics, so managing BMP and MRB files is easy. In fact, you can do just about everything you'll ever need to do with a Help project from RoboHELP without ever having to write a line of code. If you're familiar with creating Help files, you'll know all about the Help project file, which has an HPJ extension. With RoboHELP, you'll probably never have to edit this file by hand.

One area in which RoboHELP really shines is Help macros. As you may know, the Help engine provides a set of macros that you can use yourself. (These macros should really be called functions. The macro name probably comes from the fact that Windows Help was developed by the Excel group.) These macros do things like print the current topic, set bookmarks, and the like. When you tell RoboHELP you want to embed a macro, it automatically supplies a list of all the available macros. You simply click on one, and RoboHELP puts the code in your Help document.

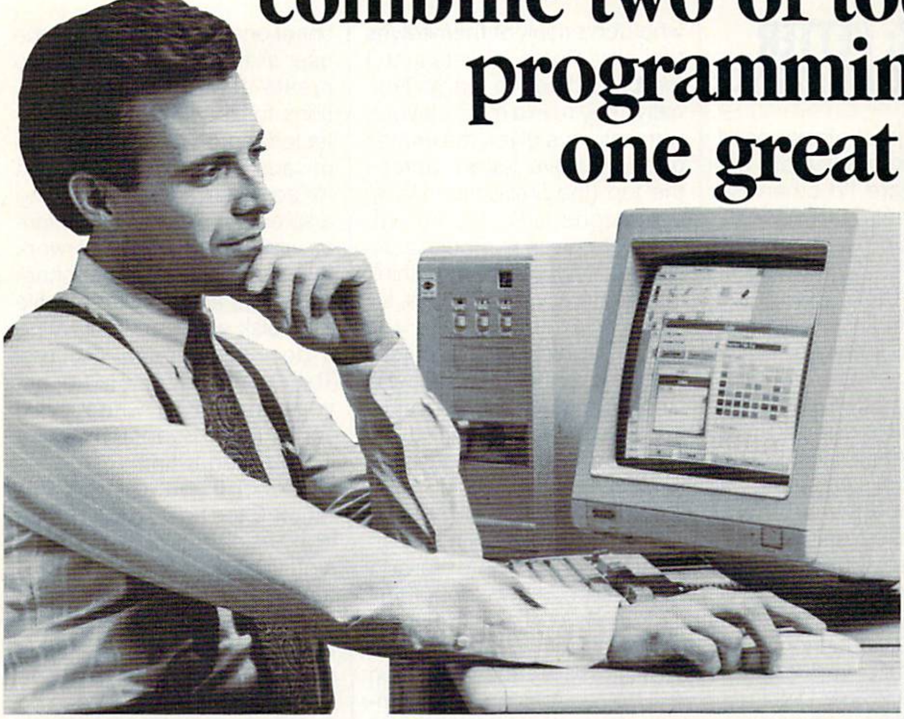
When it's time to compile, you just click on the Compile button. RoboHELP runs the DOS-based compiler engine in the background, gathers any error messages, and displays them in a window for you. You never have to see a DOS screen. In fact, unless you knew otherwise, you'd probably never guess that the Help compiler is a DOS program.

When you compile, if you find errors, RoboHELP will display the error messages and offer you a short explanation of what each error message means. If you've tried to decipher Help compiler error messages before, you know what a boon this is.

After you've successfully compiled your program, you can run it from Word by clicking on another button on RoboHELP's toolbox. If you're getting the impression that this program is wonderful, you're right. Creating Help just doesn't get any easier. ❐

Train With and Keep a Powerful 486sx/25 MHz Mini-Tower Computer!

NRI's new training in Programming in C++ with Windows lets you combine two of today's hottest programming skills into one great new career!



Like never before, organizations everywhere are paying top dollar for PC programmers who can combine the power of object-oriented C++ with the new freedom and ease of Windows to create in-demand software for business, industry, or consumer applications.

Pick up the classified section in any major newspaper and you'll see: C++ programming and the ability to create PC programs for a Windows environment top the list of job skills today's employers demand.

Now you can take advantage of today's hottest programming opportunities with NRI's new at-home training — Programming in C++ with Windows. It's the right training at the right time. And the only training that gives you everything you need to succeed today on the job, in a new career, or in a full- or part-time programming business of your own.

Get hands-on training with a 486sx-based mini-tower computer system

NRI knows: To program in C++ and create Windows applications, you need to work with a state-of-the-art computer system. That's why NRI gives you hands-on experience with a 486sx/25 MHz mini-tower computer — the most powerful computer system available in home study today. You train with and keep this state-of-the-art system, complete with VGA color monitor, enhanced keyboard and mouse, an 80 meg hard drive, and five full megabytes of RAM.

This outstanding computer system gives you the memory, speed, and power you need to take advantage of all the features of your C++ compiler and Windows software ... and develop the kind of quality software programs today's employers and consumers demand. But hardware is just part of what makes NRI training so good ...

Master object-oriented programming using Borland Turbo C++®

With NRI you learn at home, at a comfortable pace. NRI's Discovery Learning Method takes you step-by-step from computer basics to advanced programming in C++, today's hottest object-oriented programming language. As you work with the top-rated Borland Turbo C++ compiler included in your course, you master object-oriented programming methods — gaining the practical experience and design expertise that will save you time and make future programming fast and easy.

You discover for yourself how this in-demand language allows you the freedom to write real-world applications that rival software produced by top-paid design teams — from stand-alone graphics and word processing packages to spreadsheets, text editors, database managers, and more! But that's still not all...

Learn to program for the exciting visual environment of Microsoft® Windows™

With NRI training you take command of today's newest design techniques as you master programming skills for Windows — using both C++ and the built-in functions and routines of your Microsoft Windows software.

As you actually build your own software application, you develop hands-on experience with Windows' easy-to-use features —including graphics, memory management, multitasking, data exchange, and more!

Soon you're ready to use your computer and know-how to create fast, functional programs — complete with on-screen graphics, custom cursors, images, icons, and all the other Windows features you need to build high-performance software that meets today's competitive business needs.

Send for your FREE NRI catalog today!

Discover how NRI can give you the computer know-how you need for success. If the coupon is missing, write to NRI Schools, McGraw-Hill Continuing Education Center, 4401 Connecticut Avenue, NW, Washington, DC 20008.

Get practical experience with a powerful 486sx-based computer, VGA color monitor, 5 meg RAM, 80 meg hard drive, enhanced keyboard and mouse, and professional software...all yours to train with and keep!

SEND COUPON TODAY FOR FREE NRI CATALOG!

NRI Schools McGraw-Hill Continuing Education Center
4401 Connecticut Avenue, NW, Washington, DC 20008

Yes! Send me the FREE catalog I've checked and show me how NRI can give me the state-of-the-art computer training I need for advancement, extra income, or a business of my own!

☑ **Check one FREE catalog only**
☐ **PROGRAMMING IN C++ WITH WINDOWS**
☐ PC Troubleshooter
☐ PC Applications Specialist

Other computer career training:
☐ Computer Programming
☐ Desktop Publishing and Design
☐ Bookkeeping and Accounting

Name__________ Age______

Address__________

City______ State______ Zip______

Accredited Member, National Home Study Council

4537-1193

PROGRAMMING POWER

Tom Campbell

DI-OGIX: BETTER THAN I THOUGHT

One of the great pleasures of being a columnist is that I get to see software I'd otherwise miss. A perfect example is di-ogix from On Top Systems (P.O. Box 676, Northbrook, Illinois 60065-0676; (708) 291-0214). It's billed as application development software with a spreadsheet, support for multiple printers, Btree database manager with support for dBASE and ASCII files, portability to UNIX systems, and an advanced report writer. It's a character-based environment without mouse support, and it looks and feels like a spreadsheet all the way through. With its $99.95 price for a single-user DOS version up through $249.95 per UNIX user, I figured that each person who used di-ogix applications (as opposed to the developer, who wrote them) had to buy a copy. If programmers had to sell all the applications they developed using di-ogix with what was effectively a $100.00 runtime charge per copy, it seemed overpriced despite the low single-user cost. I didn't notice this clear statement on the brochure: "Applications may be distributed with di-ogix runtime royalty-free."

This is an interesting product because in 1993, it will probably appear to pundits as a good five years behind the times. Without Windows support or its own GUI or graphical print preview or requirement of 75 megabytes of disk space (would you settle for 2 megs plus change?), di-ogix would seem to be a product out of a distant era. Yet its usefulness was immediately clear to me. The phenomenal appeal of spreadsheets has produced a vast army of people who are programmers but who don't think of themselves that way. Spreadsheets aren't terribly difficult to learn. Typically, they're in a matrix layout, with columns given the names of successive letters across the top (the first column is A, the second is B, and so on). Rows are given numbers starting with 1. Spreadsheets think most naturally in numbers, so to enter a number, you just move the highlight (a cursor that normally fills one cell at a time) and start typing. To apply a subroutine called an @function (pronounced "at function") to those cells, you use the name of the formula, which normally starts with an @ sign. For example, to add up all the numbers in the first three cells of the first column (A1, A2, and A3), you'd type in, say, cell A4 the @function @SUM(A1..A3). You can combine normal math operators such as + and – and @functions into formulas. You can enter text in cells and use formulas that act on text. There are built-in @functions for just about everything, and the spreadsheet also lets you display numbers using different formatting. Dates, for example, are normally stored as numbers but are formatted for display via a date formula as dates.

Spreadsheets have a seductive immediacy about them because they show results instantly.

Last but not least, spreadsheets have a seductive immediacy about them. Because they show the results of formulas instantly, they allow you a lot more experimental latitude than pencil and paper, promoting insane bouts of fiddling with mortgage payments, project schedules, and even small database applications.

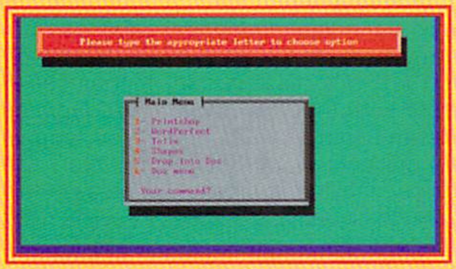
While the @function approach isn't elegant, millions of people know it by now. Once you've learned spreadsheet basics, there's little else to trip you up. This product capitalizes on spreadsheet strengths and goes the spreadsheet one further by giving the user all the tools necessary to create stand-alone applications for anything from a protected-mode 386 to an 8088 dinosaur. There are @functions for advanced data entry (long a spreadsheet bugaboo), menus, relational database work far beyond what spreadsheet users are accustomed to, file and disk access—everything a developer needs. (Almost. The debugger costs extra, but you can get by without it if you're underbudgeted.) Even if you don't know spreadsheets or if you've found BASIC or C too hard, you'll find di-ogix capable of producing significant works with only a few weeks of study. If you know spreadsheets, that time estimate will drop to a few days. This program has the best tutorials I've ever seen on a commercially released product; they make up an entire training manual and provide step-by-step examples of all its major features. If you find learning software difficult because manuals take too much for granted, the di-ogix training manual will be a revelation. The reference isn't quite as close to the mark. It's underindexed and lacking in some information (such as details on file formats, which the tech people happily provided), and it's sprinkled with gaseous "inspirational" epigrams that did nothing to improve my reading experience. Ironically, the sample applications are OK but not nearly up to the product's potential.

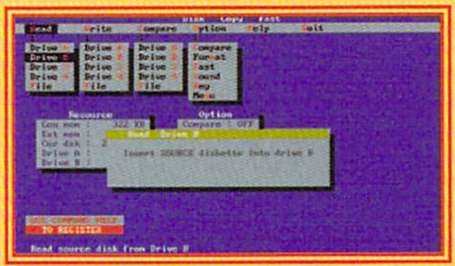
This product is up to just about any small business, charitable organization, or club task, and you can give away or sell your programs with a free runtime version that's included in the price. If you've found traditional programming languages too complex or slow, take a long, hard look at di-ogix before you give up. ❐

COMPUTE's
ULTIMATE POWER DISK

Don't miss the dazzling, ready-to-run DOS and Windows programs on this issue's disk!

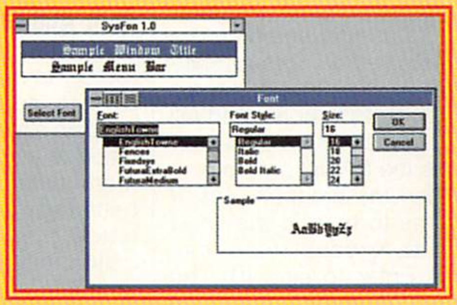
BENny
BENny is a batch file enhancement utility that adds color and functionality to your batch programs.

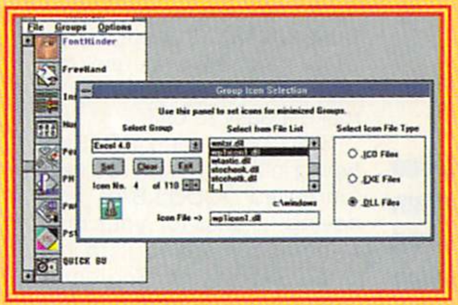

Please type the appropriate letter to choose option
Main Menu
1- Printshop
2- WordPerfect
3- Tetris
4- Shapes
5- Drop into Dos
6- Dos menu
Your command?


Insert SOURCE diskette into drive B
Read source disk from Drive B
Disk Copy Fast
Read
Write
Compare
Option
Help
Quit
Drive A
Drive B
File
Compare
Format
Fast
Sound
Key
Menu
Resource
Con mem : 322 KB
Ext mem :
Cur disk : 2
Drive A :
Drive B :
Option
Compare : OFF
Read Drive B
TO REGISTER

Disk Copy Fast
Disk Copy Fast is a single-pass disk-duplicating utility. It can be operated from the command line or from menus.

SysFon
Create a Windows system font from any existing Windows screen font. Now you can decide how Windows looks.


SysFon 1.0
Sample Window Title
Sample Menu Bar
Select Font
Font
Font:
EnglishTowne
Fences
Fixedsys
FuturaExtraBold
FuturaMedium
Font Style:
Regular
Italic
Bold
Bold Italic
Size:
16
18
20
22
24
OK
Cancel
Sample
AaBbYyZz


Use this panel to set icons for minimized Groups.
File
Groups
Options
FontMinder
FreeHand
QUICK BU
Group Icon Selection
Select Group
Excel 4.0
Set
Clear
Exit
Icon No. 4 of 110
Select Item File List
wplicon1.dll
wtastic.dll
stochook.dll
stochelk.dll
[..]
c:\windows
Icon File -> wplicon1.dll
Select Icon File Type
○ .ICO Files
○ .EXE Files
● .DLL Files

WinFast
Turn Program Manager groups into desktop icons. Display applications in drop-down button bars.

Subscribe to COMPUTE's PC Disk, and every other month—six times a year—you'll receive a disk chock-full of great DOS and Windows shareware and freeware programs, including powerful applications, sleek utilities, and eye-popping graphics.

For Single Disks

YES! I want to power up my PC. Send me this issue's COMPUTE's PC Disk. I'll pay $9.95 for each 5¼-inch or 3½-inch disk plus $2.00 shipping and handling per disk.

Please indicate how many disks of each format you'd like:
______ 5¼-inch disk(s) at $9.95 each
______ 3½-inch disk(s) at $9.95 each
______ Subtotal
______ Sales Tax (Residents of NC and NY, please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.)
______ Shipping and Handling ($2.00 U.S. and Canada, $3.00 surface mail, $5.00 airmail per disk)
______ Total Enclosed

Send your order to COMPUTE's PC Disk
324 W. Wendover Ave., Ste. 200
Greensboro, NC 27408

All orders must be paid in U.S. funds by check drawn on a U.S. bank or by money order. MasterCard or VISA accepted for orders over $20. This offer will be filled only at the above address and is not made in conjunction with any other magazine or disk subscription offer. Please allow 4–6 weeks for delivery of single issues or for subscription to begin. Sorry, but telephone orders cannot be accepted.
Disks available only for IBM PC and compatible computers.
Offer good while supplies last.

For Subscriptions

YES! I want to save even more! Start my one-year magazine and disk subscription to COMPUTE and COMPUTE's PC Disk right away.
______ 5¼-inch $49.95 per year
______ 3½-inch $49.95 per year
For delivery outside the U.S. or Canada, add $10.00 for postage and handling.

Name ______
Address ______
City ______
State/Province ______
ZIP/Postal Code ______
Total Enclosed ______
______Check or Money Order ______ MasterCard ______VISA
Credit Card No. ______
Expiration Date ______
Signature ______
Daytime Telephone No. ______

Send your order to COMPUTE's PC Disk
P.O. Box 3244
Harlan, IA 51539-2424

TIPS & TOOLS

Edited by Richard C. Leinecker

Running a one-line BASIC program from Windows and using your keyboard as a typewriter

Windows One-Liners

Windows is great for doing almost everything. But there are plenty of times I know a DOS shortcut that could save some steps. Or often, I just feel more comfortable doing something from DOS. But using these options usually means running the DOS prompt, doing what I need to do, and then typing *exit* to return to Windows.

I've devised an easier way. I use QBASIC to perform the DOS function and use the nice features Windows has to make it easy to call.

Start by running QBASIC, typing in the program I've written called DODOS.BAS, and saving it. Just for your own reference, I saved it to my C:\DOS directory. You don't have to do exactly this, but in my instructions later, I explicitly name this as the place where I saved it. If you save it to a different directory, make the substitution when following the directions to set up the Windows icon.

```
PRINT “Enter your one-line DOS
  command (or Enter to abort)”
INPUT A$
IF A$ = “ ” GOTO OUTOFHERE
SHELL A$
PRINT “Press any key to return to
  Windows . . .”

GETKEY:
A$ = INKEY$
IF A$ = “ ” GOTO GETKEY
OUTOFHERE:
SYSTEM
```

With the BASIC program saved, go to Windows. Pick the window in which you want the DOS command icon to appear. I used the Accessories window. Click in this window, and go to the Program Manager's File menu and select New. Make sure the Program Item button is selected when the dialog appears. Click on the OK button.

For my description I typed in *Single DOS Command.* For my command line I typed in *qbasic /run c:\dos\dodos.bas.* For my working directory I typed in *c:\dos.* It's important to note here that the BASIC code and the QBASIC program are both in my C:\DOS directory. If either is different, change the command line entry accordingly.

The last thing I did was to make the BASIC program easy to use by entering in a shortcut key. I pressed Shift-Ctrl-D. Anytime I want to run a single-line DOS command, all I do is press Shift-Ctrl-D, and it runs the BASIC program.

When the program runs, it tells me to type in the line I want to execute (or I can press Enter to skip it). The command is executed, and then I press a key to return to Windows. It's all much easier than using the DOS prompt.

ELMER W. ALLISON
APO

Graphic Boxes

WordPerfect 5.1's cross-references feature (Alt-F5, 1) gives you a great way to cite page numbers of specific points in a long document. You do have to be careful where you put a cross reference. You cannot, for example, put a cross reference in the text area of a graphic box. But you can reference graphic boxes by placing a page-number Target reference (Alt-F5, 1, 2) in the graphic box caption.

If page space forces the graphic box to bump to a following page, the page-number reference will still be generated correctly.

WILLIAM WOLFE
CHAMPAIGN, IL

More Typewriting

In the June 1993 issue you have a tip that makes your keyboard into a typewriter. It works pretty well, but there's another way that works well, too.

At the DOS prompt type *copy con prn* and press Enter. From that point on, what you type will be sent to the printer. Once you're done, press F6 and Enter.

EDGAR F. GARWOOD
HUDSON, FL

Path Additions

Sometimes I want to add a directory to my path for a short while. I used to simply retype my path statement with the addition. After doing that far too many times, I discovered a better way in the form of two batch files. The first one, called ADDPATH.BAT, adds a single directory to your path statement. The second one, called RESTPATH.BAT, restores the path to whatever it was before you ran ADDPATH.BAT the last time.

This only works correctly if you add and restore in pairs. Make sure your path in AUTOEXEC ends with a semicolon. Any semicolon you type when adding to your path will be ignored. Here is the listing for ADDPATH.BAT.

```
@ECHO OFF
SET OLDPATH=%PATH%
SET PATH=%1%PATH%
```

Here is the listing for RESTPATH.BAT.

```
@ECHO OFF
SET PATH=%OLDPATH%
```

THOMAS E. HINES III
KANSAS CITY, MO

Personal Backups

Running complete backups is very time-consuming. I've written a batch file called QBACK.BAT to back up only my personal data files. It's quick, and the backups fit on a single high-density floppy

U.S.Robotics®

MAKE THE INTELLIGENT MODEM CHOICE!
INSTANT WIN GAME

Playing the U.S. Robotics® Intelligent Modem Choice Game could put you in a 1994 Jeep Cherokee Sport!

Sportster
14,400 FAX MODEM
External Version
CCITT V.32 bis with V.42 bis
GROUP III Fax
WinFax
Designed to be affordable for small business, home office and personal use.
MAKE THE INTELLIGENT MODEM CHOICE! GAME PIECE INSIDE
WORLDPORT
U.S.Robotics
The Credit-Card-Sized Fax/Data Modem from the Leader in Computer Communications.
14,400 V.42bis Fax/Data PCMCIA 2.0 Modem

Buy a U.S. Robotics Sportster® or WorldPort™ now, and you could win one of over 10,000 prizes!

You'll find official Scratch & Win cards inside specially marked Sportster and WorldPort packages at your participating U.S. Robotics reseller between September 1, and December 31, 1993. Imagine – you could have the only sport utility vehicle on your block that does 14.4 from a standing start!

And you'll know you made the intelligent choice every time you go on-line with your reliable U.S. Robotics modem!

Sportster®
Unbeatable performance and price in an easy-to-use modem for office or home.

Computer Shopper Magazine rates Sportster #1!

WorldPort™
Desktop performance in a portable modem for the traveling professional.

BYTE Magazine gave WorldPort its Award of Distinction!

U.S.Robotics®

***ONE GRAND PRIZE:**
1994 Jeep Cherokee Sport

***TWO FIRST PRIZES:**
4-Day, 3-Night Bahamas Cruise

***THREE SECOND PRIZES:**
Panasonic Palmcorder Camcorder

***TEN THIRD PRIZES:**
Panasonic CD Player

***10,000 FOURTH PRIZES:**
USR Intelligent Modem Choice T-shirts

*No purchase necessary– To obtain a free Make the Intelligent Modem Choice gamepiece while supplies last, send a stamped, self-addressed envelope to: Make the Intelligent Modem Choice Free Gamepiece, P.O. Box 650, Sayreville, NJ 08871, before December 15, 1993. Residents of WA, VT and Canada may omit return postage. Game ends December 31, 1993.

Circle Reader Service Number 301

disk. Modify it to suit your own needs.

```
@ECHO OFF
ECHO Place backup disk
ECHO in drive A.
PAUSE
PKZIP -BC -U A:\ROOT C:\*.*
PKZIP -BC -U A:\WININI
  C:\WINDOWS\*.INI
PKZIP -BC -U A:\WORKS
  C:\MSWORKS\*.W??
PKZIP -BC -U A:\GRAFFIX
  C:\GRAPHICS\*.c??
```

You must have the program PKZIP located somewhere in your path. The -U switch processes only new or modified files. The -BC switch makes PKZIP use drive C for its temporary files so that the entire space of the floppy can be used.

The result is a floppy with ZIP files containing the files I need to save. They're only the latest versions of the files on my hard drive.

ALEX FREIBERG
SOUTH YARRA, AUSTRALIA

Finding Your Roots

Here is a little tip that I have found useful. Some programs that I run either change directories or need them changed before running. I wanted a good way to return to the same directory I started from.

I have seen several tips in the past that suggested saving the directory using the CD command and then using Debug to shorten the outputs, thus creating a batch file containing one line that had the current drive and one line that had the current directory with CD \ before it.

So with that idea in mind, I wrote SAVEDIR.

```
debug savedir.com
File not found
-e 100 b4 19 cd 21 00 06 30 01
-e 108 b4 47 b2 00 be 38 01 cd
-e 110 21 bb 38 01 43 80 3f 00
-e 118 7f fa c6 07 0d 43 c6 07
-e 120 0a 43 c6 07 24 b4 09 ba
-e 128 30 01 cd 21 b4 4c cd 21
-e 130 41 3a 0d 0a 43 44 20 5c
-RCX
CX 0000
:38
-W
Writing 0038 bytes
-Q
```

When you run Checksum on this program, you should see the number 04660 on your screen. (The latest Checksum program can be found in the July 1993 "Tips & Tools.")

Here is a sample batch file that might use it.

```
@ECHO OFF
 SAVEDIR >
C:\BAT\RESTDIR.BAT
D:
CD \WP51\DOCS\AR\MAR93
WP REPORT.WP
RESTDIR
```

When I exit WordPerfect, I am returned to the directory that I started in on the drive that I started from. The batch file above assumes that I have a directory named BAT that is in my

ALT
ZOOM
1.0
LIGHTS
OFF
COM
120.
NAV
110.
000
OFF
GS
180

path. It creates a batch file with DOS redirection that later it invokes to return to that exact place.

BRADLEY M. SMALL
GREENSBORO, NC

One-Line Time

I get tired of having my computer stop for a new time entry each time I type *time* at the command line. Usually, I don't want to set the time. I just want to know what time it is.

Here's a QBASIC program I use in place of my Time command. It's called TIME.BAS.

```
PRINT TIME$
SYSTEM
```

Then I created a batch file called T.BAT, which I placed in my DOS directory.

```
QBASIC /RUN TIME.BAS
```

Whenever I want the time, I just type *t* and press Enter.

Since QBASIC also has a DATE$ function, you can easily adapt this tip to print the date without DOS pausing for input afterward.

ROBERT BIXBY
GREENSBORO, NC

Even Less Time

Not satisfied with the previous tip, which causes the QBASIC screen to flash before the time is displayed, I came up with the following set of batch files that display the time and date without going through BASIC.

The first set is for MS-DOS, and the second set works with 4DOS.

Here is TDOS.BAT, which displays the time if you are using MS-DOS.

```
@SET OP=%PROMPT%
@SET PROMPT=$T$_
@SET PROMPT=%OP%
```

Here is DDOS.BAT, which displays the date in MS-DOS.

```
@SET OP=%PROMPT%
@SET PROMPT=$D$_
@SET PROMPT=%OP%
```

Here is T4DOS.BAT, which displays the time in 4DOS.

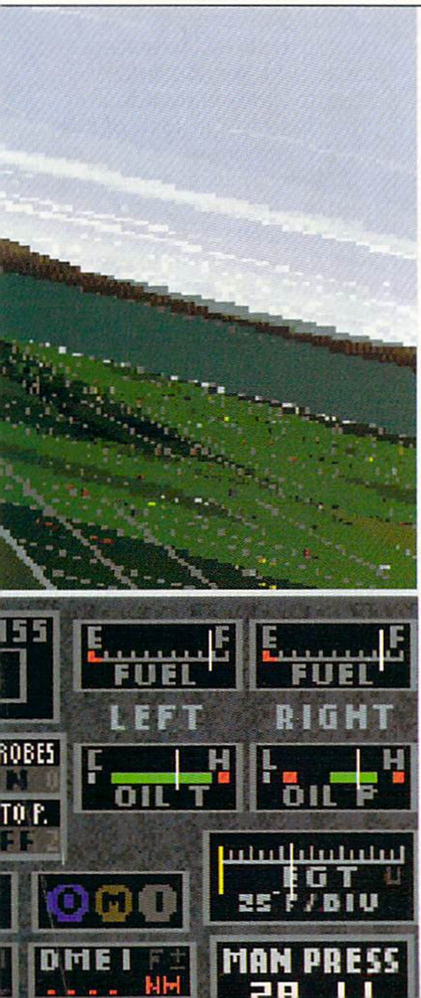
```
@echo %_time
```

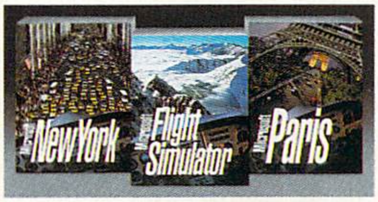
And finally, the following program is D4DOS.BAT, which can be used to display the date in 4DOS.

```
@echo %_date
```

BRADLEY M. SMALL
GREENSBORO, NC

If you have an interesting tip that you think would help other PC users, send it along with your name, address, and Social Security number to COMPUTE's Tips & Tools, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. For each tip we publish, we'll pay you $25–$50. All tips submitted become the property of General Media International. ❐





THE ONLY THING IT DOESN'T SIMULATE IS EAR POPPING.

If it were any more real, your chair would be in a 30° bank. Our new Microsoft® Flight Simulator™ has four planes, each with its own instrument panel created digitally from actual photographs. There are storm clouds and sunsets to fly into. Crashes are scarily real. And you can fly to airports anywhere in the world. For even more detailed flights, there are New York and Paris scenery enhancements*. Everything is at your reseller. So, take off.

Microsoft Home

*New York and Paris scenery enhancements coming this fall. © 1993 Microsoft Corp. All rights reserved. Microsoft is a registered trademark of Microsoft Corp. Flight Simulator is a trademark of Bruce A. Artwick.

HARDWARE CLINIC

Mark Minasi

CMOS FAILURE

How can you find out your hard drive type when you lose your setup? Use Norton's Diskedit to find that hard-to-trace information.

I got a letter from a reader in Sioux City, a fellow named Chuck Rearden. Chuck had a common problem: Something had blown away his system's setup information, and he didn't know where to get the information to restore it.

The best solution to this sort of problem, as it turns out, is fairly simple (but not obvious), so I thought I'd share it with you.

"I did something dumb, and now I'm paying for it," Chuck told me in his letter. "In the cold of our dry South Dakota winter, I walked into my office and touched the case of my PC. I felt the shock of a static zap jump from my finger to the PC's case, and when I turned my PC on, my worst fears were confirmed.

"I got a message saying *CMOS memory checksum failure, press F1 to continue*. I didn't know what that meant, but it didn't look good. So I pressed F1, but then all I got was a message saying *disk boot failure*."

By the time I got Chuck on the phone, it was three weeks after the date of his letter. He'd progressed a bit. In three weeks, Chuck had learned what a CMOS memory checksum failure is.

"I've found out that I've got to fix the CMOS information with a program called Setup, which is built into my computer," he explained. "I can only get into it when booting the system; if I press the Delete key, the Setup program appears.

"It needs to know a bunch of information about the computer, but most of it's pretty simple. It wants to know the date and time, and that I can handle, and even filling in the type of floppy drives isn't too hard—the dealer helped me out with that. I didn't touch the display type, as it said *VGA/PGA/EGA*. I left it untouched, even though I've got Super VGA, because there wasn't an option for Super VGA, and the dealer told me to leave it as is.

"What stumps me, and the dealer too, is the drive type. Setup needs to know the number of cylinders, sectors, and heads, and the write precompensation—whatever that is—for the hard drive. I don't know the information, and the dealer. . .doesn't, either. So we're stuck until I can find out how the drive's laid out."

One of the more annoying events in any PC support person's life (or any PC owner's life) is dealing with a four- or five-year-old computer that's lost its setup information (also known as its CMOS data). The CMOS includes data that is, in general, easy to retrieve—what kinds of floppy drives you've got and how much memory is in the system.

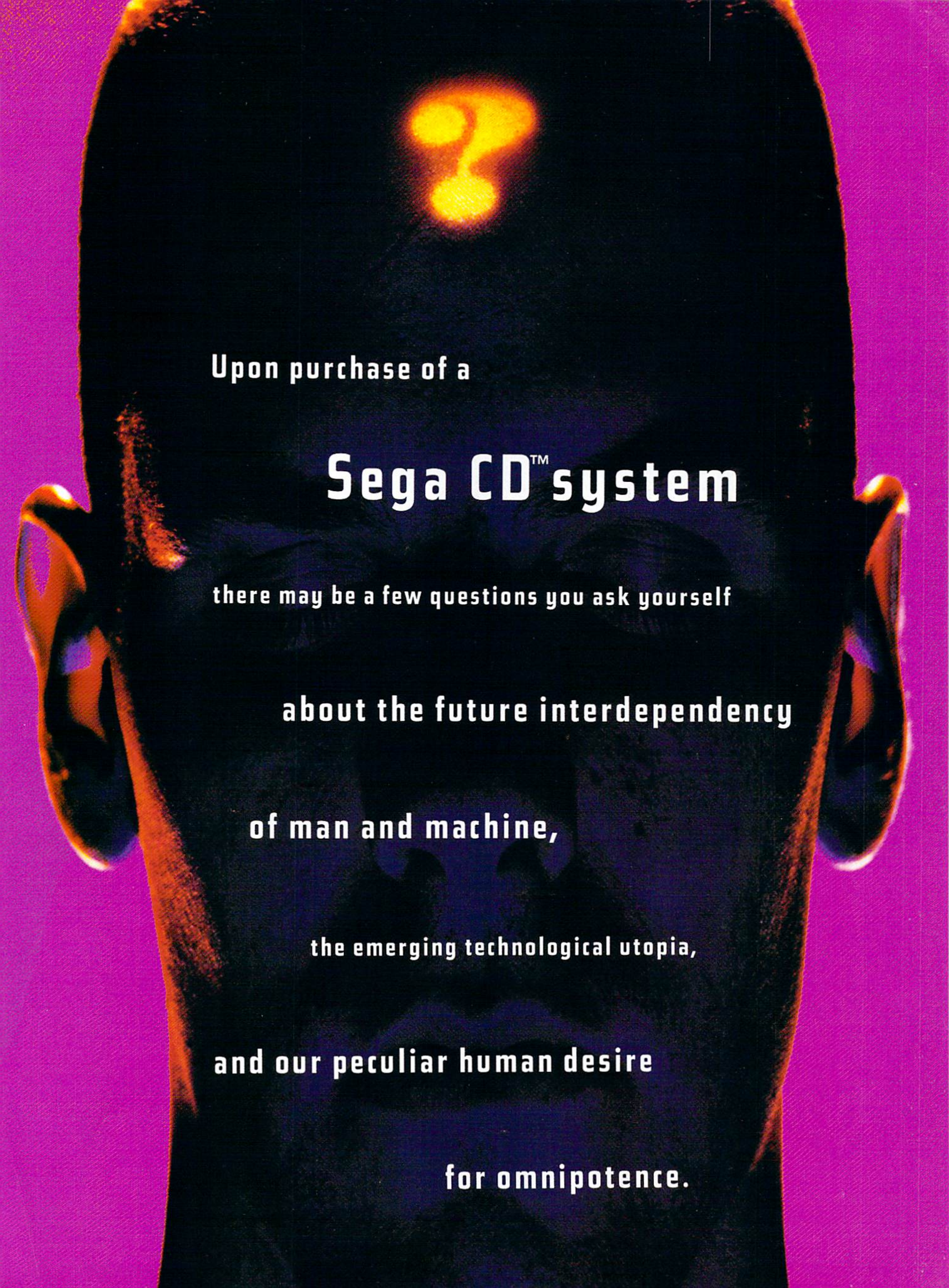
But losing the CMOS does cause one major problem: You lose the drive type information. Setting up the CMOS again for a hard drive requires that you know four things about a drive: how many read/write heads in the drive, how many cylinders on the drive, how many sectors on each hard disk track, and which cylinder to start doing write precompensation on (don't worry about write precomp).

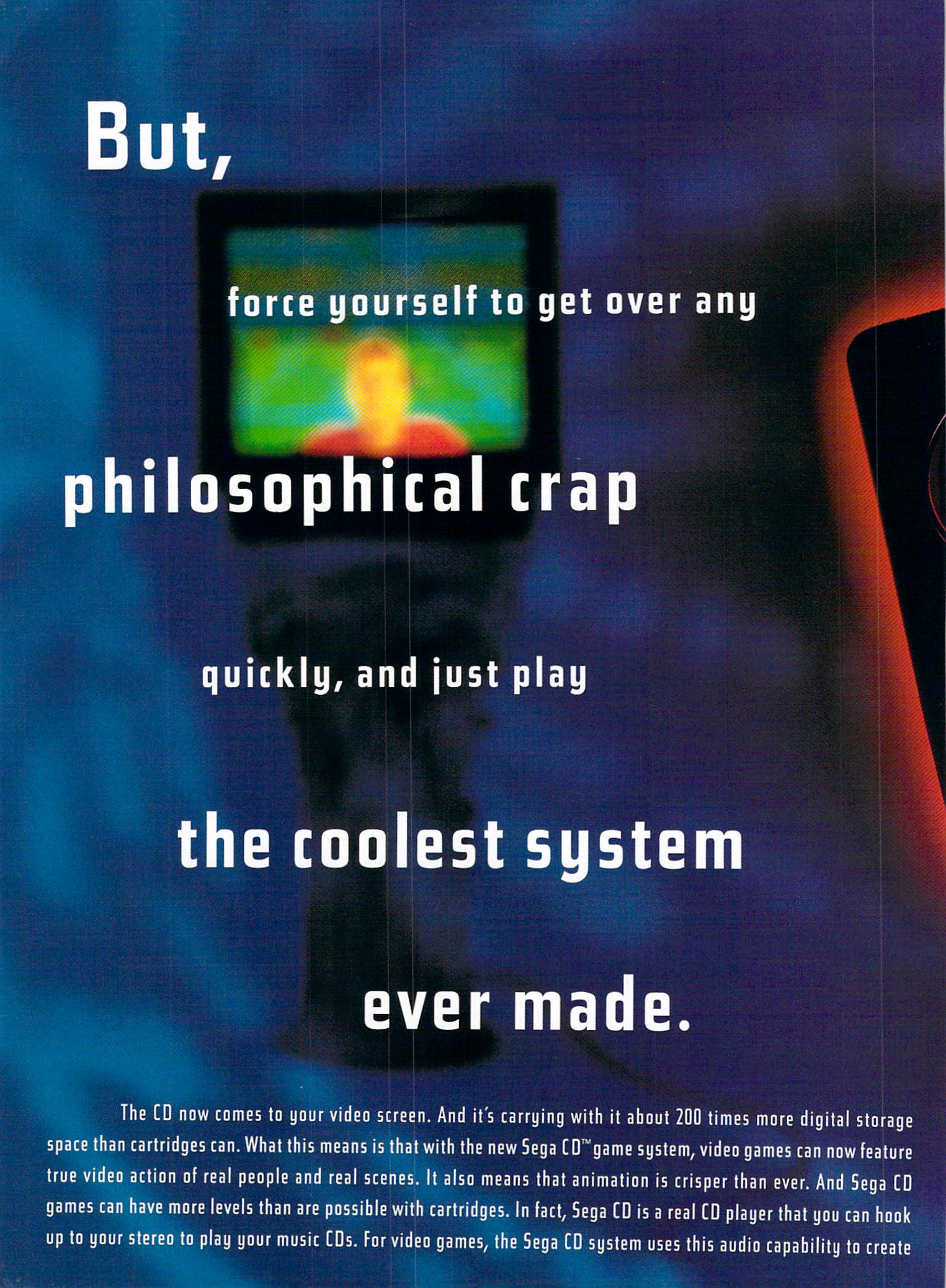
Sometimes you'll lose your setup information by overwriting it or by some electrical or mechanical mishap, but most commonly the CMOS is lost because the battery that maintains the CMOS information runs out of power—usually about three to five years after you've purchased the computer. If the CMOS's battery loses power, then the CMOS forgets what it knows about your system. When you power it up, the computer detects that the CMOS's battery is dead and says, in effect, "I have no idea what kind of equipment is in me—what kind of floppies, display, hard drive, or even the date or time. If you press F1, then I'll take the best guess that I can." Unfortunately, its best guess about hard drive type is that there's no hard drive at all. Since the system thinks that there's no hard drive present, it only tries to boot from the floppy. The floppy drive, however, probably doesn't contain a bootable floppy, so the boot-failure message appears.

Many people find that when the battery gets low, the date and time are fine, but the other CMOS information is gone. That's fairly common. The clock is maintained by a simple clock circuit, but the other information is maintained by a memory circuit. Memory circuits draw more power than clock circuits, so it's quite reasonable for the clock to continue to keep fairly accurate time despite the loss of the CMOS memory.

Anyway, back to solving the problem. As the computer is about four or five years old (which is, again, the life expectancy of the average CMOS battery), you've probably mislaid the documentation (if you ever got it in the first place) about the hard disk. How are you to find out the disk's geometry? (For *geometry*, read *the number of heads, cylinders, and sectors.*)

One surefire approach is to take the cover off the computer, remove the hard disk, and look for a model and serial number, like XTOR-TECH model E425523-SW. You'd then find the number for the hard disk maker, call, and ask what the geometry of the hard disk is. There are, however, two problems with this method. The first problem is that it's a pain in the neck to have to remove the drive, find a phone number for the vendor, and try to


Upon purchase of a
Sega CD™ system
there may be a few questions you ask yourself
about the future interdependency
of man and machine,
the emerging technological utopia,
and our peculiar human desire
for omnipotence.


But,
force yourself to get over any
philosophical crap
quickly, and just play
the coolest system
ever made.

The CD now comes to your video screen. And it's carrying with it about 200 times more digital storage space than cartridges can. What this means is that with the new Sega CD™ game system, video games can now feature true video action of real people and real scenes. It also means that animation is crisper than ever. And Sega CD games can have more levels than are possible with cartridges. In fact, Sega CD is a real CD player that you can hook up to your stereo to play your music CDs. For video games, the Sega CD system uses this audio capability to create

SEGA CD
GENESIS
COMPACT disc
SEGA
ACCESS
SEGA GENESIS
START
A
B
C

sense-surrounding CD-quality sound that surpasses any other game system. It's no wonder that the coolest sound effects and most original stereo sound tracks ever are now available in games for Sega CD. With a sleek, new design and simple on-screen controls, Sega CD does for video games what CDs did for your mom's scratchy music collection. Yet, Sega CD is more affordable than you probably thought. It even comes packaged with Sewer Shark™ the best-selling TruVideo™ action/adventure game. So turn the page. And enter the next level.

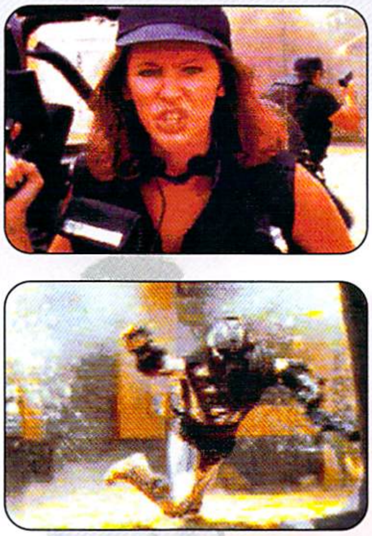
Is controlling the fate of actual persons

with a small black box

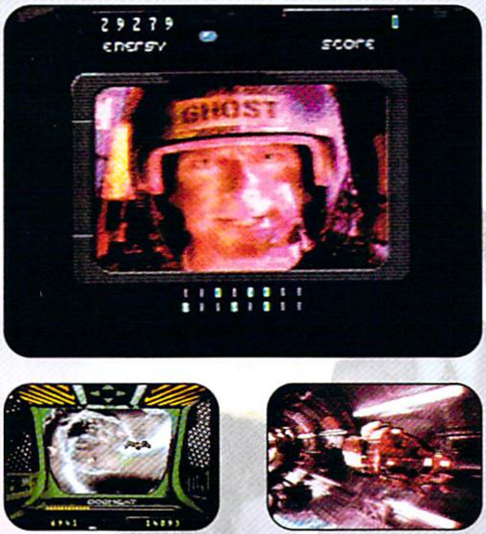
foreshadowing a future when we are merely pawns

in some technical wizard's sick dream?

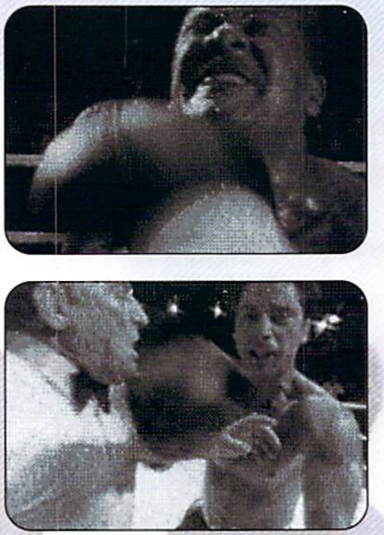
SEGA
GENESIS
START
A
B
C
TRIGGER



GROUND ZERO, TEXAS™ *In a small Texas town, aliens disguised as humans threaten the planet. This TruVideo™ interactive movie game puts you at ground zero for incredible action. You control the plot and the future of mankind.*



SEWER SHARK™ *Full action, real video. Interact one-on-one with ace tunnel-jockey Ghost and the devious, fat-faced Stenchler, as you navigate through post-nuclear subterranean sewer tunnels infested with ferocious, really nasty radioactive Ratigators.™ Yuck, sounds like a blast.*



PRIZE FIGHTER™ *Go toe-to-toe with four boxers, all the way to the Championship bout. Amazing first-person, TruVideo™ boxing action, with control and speed that sets new standards for interactive video gameplay.*

No, bonehead.

It's just some really bent fun, that's all.

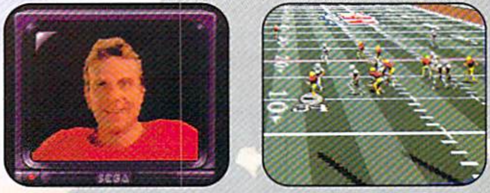
PILOTS
SCORE

REBEL ASSAULT™ (JVC) *Astonishing 3-D graphics, digitized speech and original CD score. Full motion video from the Star Wars® movies. Control three different Star Wars vehicles, and save the Federation. And may the best man, or mutant, or whatever the heck you find in outer space, win.*

SCORE 500650
HEALTH
OVERLOAD
SHIELD

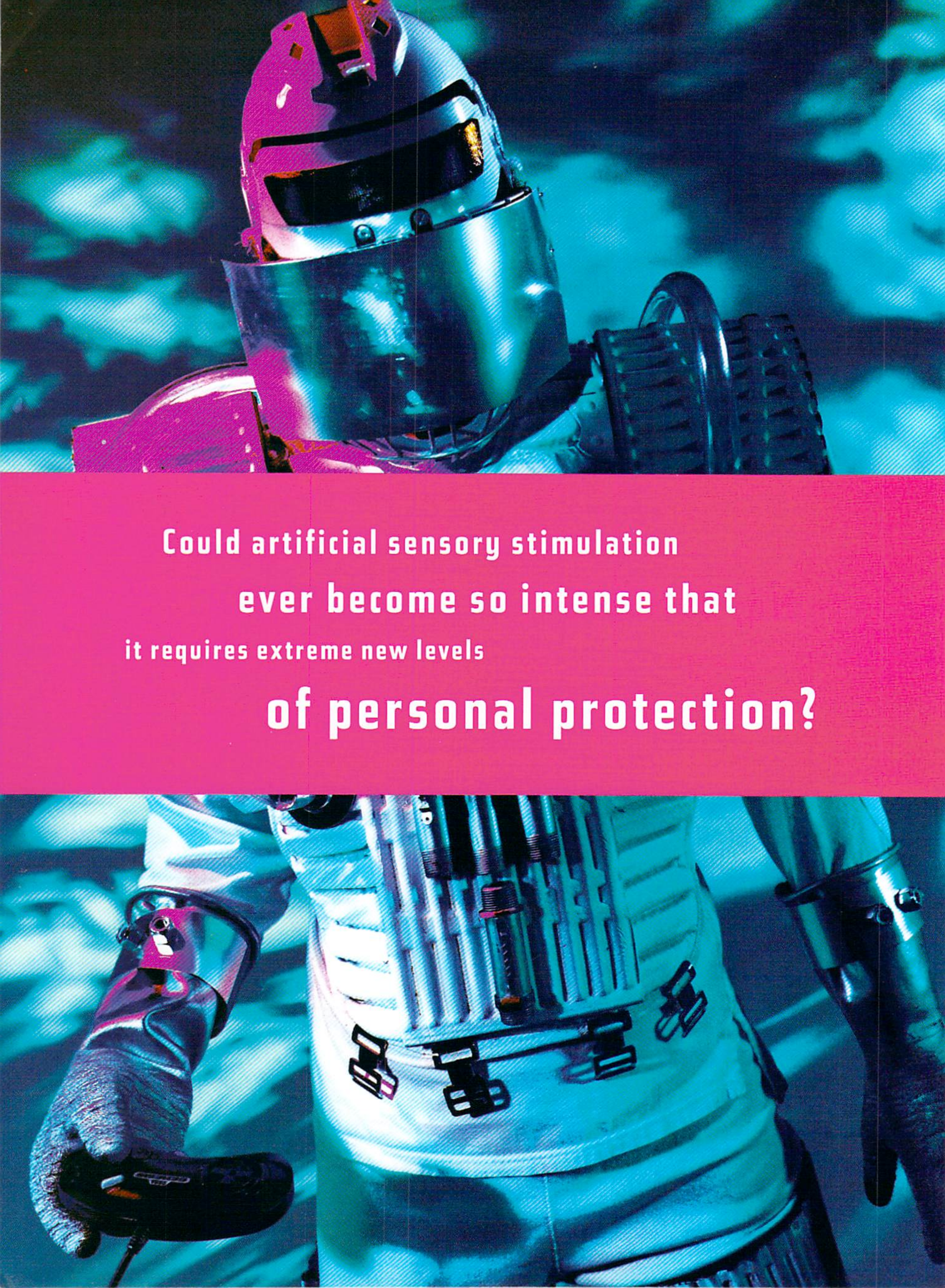
MICROCOSM™ (Psygnosis) *A dazzling animation triumph, with tons of incredible graphics and extraordinary sound, including an original CD soundtrack by Rick Wakeman. This is no game—it's a cinematic adventure and a struggle for control, inside a living human being.*

Is it live, or is it a game? As the line blurs between reality and video games, you realize: This is the interactive video everyone's been talking about and waiting for. And it's here now. Sega CD™ makes it possible to interact with real video, of real people, in real, life-like situations. It's like being at the movies, only you control the outcome. Look over your gloves and trade punches with a live boxer—not a cartoon. Joe Montana helps you choose your next play. Vanquish the alien invaders of a small Texas town. You direct the action from Ground Zero. The possibilities are limitless. These games here? They're just the beginning.

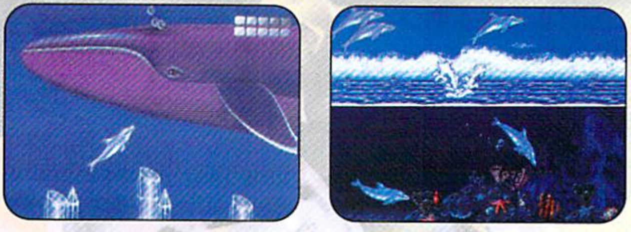


JOE MONTANA NFL FOOTBALL™ *Zooming 3-D play views, all 28 NFL teams and stats, plus your own TruVideo™ Joe Montana to help you call your next play. And the best thing is, you don't have to get traded to Kansas City in order to play. Just kidding, we love KC.*

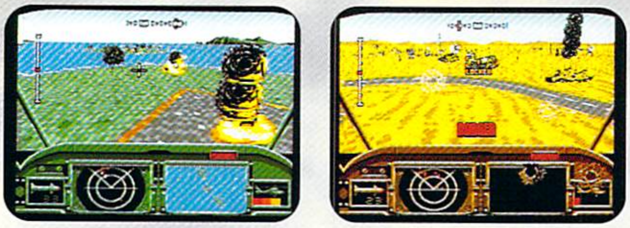
MAD DOG McCREE™ (American Laser Games) *You get to try to outshoot real Western outlaws in exciting real video gunfights in this interactive saga of the Old West. This best-selling action game is now available on Sega CD. If you want to know what it "feels" like to be a cowboy, this is it.*



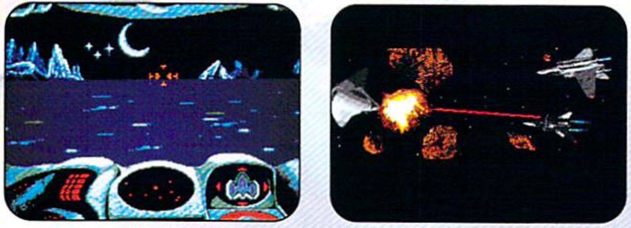
Could artificial sensory stimulation ever become so intense that it requires extreme new levels of personal protection?



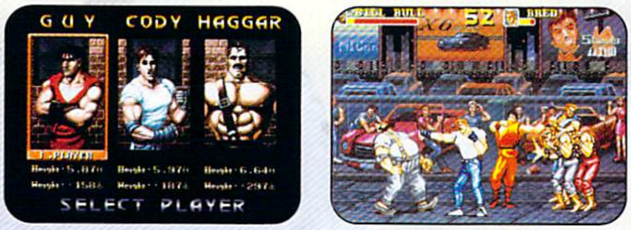
ECCO THE DOLPHIN™ *Acclaimed for its graphic achievements, this adventure game comes to CD with more levels, an original CD-quality score and Qsound™ 3-D audio which means it's so sophisticated only dolphins can hear it. Not.*



AH-3 THUNDERSTRIKE™ (JVC) *Sega CD's scaling and rotation creates the fastest action and most realistic scrolling terrain outside the arcade. This is the state-of-the-art 3-D helicopter simulation game. Or is it simulation?*



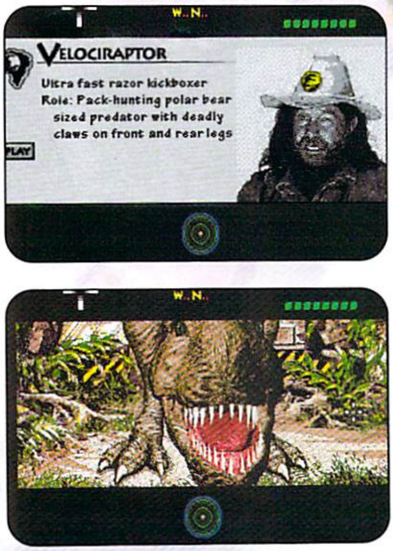
STELLAR FIRE™ (Dynamix) *Fast, exciting battle action in space. Unique polygon-based 3-D backgrounds, hot CD music on every level and amazing special effects. And you'd better hold on, this one's a heck of a ride.*



FINAL FIGHT CD™ *The brawling arcade classic with six no-mercy levels of crime-fighting action. A Sega CD exclusive for fighting game fans. But be careful because, as the name implies, this is a no holds barred fight to the very end.*

Yeah...

to fend off everyone else who wants to play it.

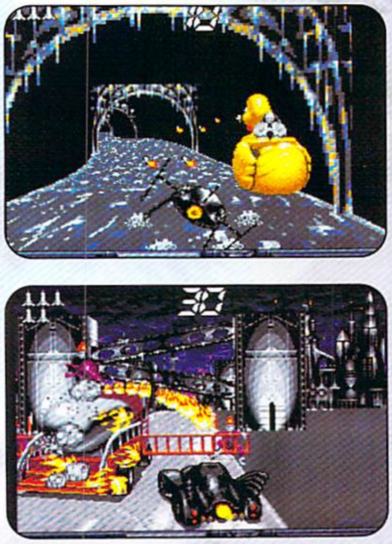


VELOCIRAPTOR

Ultra fast razor kickboxer
Role: Pack-hunting polar bear sized predator with deadly claws on front and rear legs

JURASSIC PARK™ *for* **Sega CD.™** *Famed paleontologist Dr. Robert T. Bakker guides you through the challenges and dangers in TruVideo.™ Movie-style action and adventure with original music and QSound.™*

Talk about visual stimulation: Now you can experience retinally intoxicating video and animation, and more playing levels than ever before possible. Talk about audio stimulation: Sega CD™ games with QSound blow you away with intensified music tracks and sound effects with 3-D sound processing. It puts you right in the middle of the action you're directing. So quit talking about it. You need to get down to the store and try out this system in person. Because while Sega CD may represent the future, it's up and running right now, with a new world of digital, interactive action games, adventure games, sports games and more. **Warning:** If at first it's too intense, don't panic. Just hit "pause," count to ten, and remember how mellow video games used to be.



BATMAN™ RETURNS *For the true Batman™ aficionado, three different and complete games with the caped crusader: Arcade-style combat levels, plus 3-D Batmobile™ and Batski™ driving levels. Holy action-oriented.*

"Wow!! ... The **Batman**™ **Returns** Sega CD™ game scores a perfect 10 on the droolometer ... the scaling has to be seen to be believed ... this is what CD is all about. Incredible, unbelievable and a must buy!"

Die Hard GAME FAN Magazine

"Sega CD's got ... a hundred-miles-per-minute, white-knuckled, rollercoaster ride! **Sewer Shark**™ is guaranteed to thrash you, your Genesis,™ and your CD!"

GAMEPRO Magazine

"If you thought **Night Trap**™ was terrific, wait until you see **Sewer Shark**."

Glenn Rubenstein, **At the Controls**

"With **Dracula**,™ Sega is going to move a bazillion Sega CDs real quick, as this game truly does break new ground."

Die Hard GAME FAN Magazine

"This incredible version of **Final Fight**™ is finally available on the Sega CD! All the stages from the arcade have been faithfully redone along with a jammin' CD soundtrack."

Electronic Gaming Monthly

"The long-awaited CD version of the hit revolutionary game **Ecco**™ ... (is) ... done with incredible QSound™... the music is quite superb ... the sound effects are great ... It's for Sega CD owners everywhere!"

Electronic Gaming Monthly

SEGA CD™

WELCOME TO THE NEXT LEVEL™

Sega, Genesis, Sega CD, WelcomeTo The Next Level, TruVideo and all game titles are trademarks of SEGA unless otherwise noted below. Game screens shown were photographed from video monitors. PrizeFighter and Ground Zero, Texas are produced by Digital Pictures, Inc. for SEGA. QSound is a trademark of Archer Communications, Inc. Manufactured under license from QSound Ltd. ©1993 Archer Communications, Inc. Additionally licensed under one or more of the following patents: US numbers 5,046,097, and 5,105,462 and corresponding foreign patents. All rights reserved . Sewer Shark is distributed by Sony Imagesoft. Sewer Shark was developed by Digital Pictures, Inc. Sewer Shark is a trademark of Hasbro, Inc. Jurassic Park™ & ©1993 Universal City Studios, Inc. Amblin Entertainment, Inc. Licensed by MCA/Universal Merchandising, Inc. All rights reserved. NFL team names, logos, and helmet designs are registered trademarks of the NFL and its Member Clubs. Final Fight ©1989 Capcom. All rights reserved. Reprogrammed Final Fight game ©1993 SEGA. AH-3 Thunderstrike™ & ©1993 Core Design Ltd. ©1993 JVC Musical Industries, Inc., ©1993. All rights reserved. Used under authorization. Batman and all related elements are property of DC Comics, Inc.™ & ©1993. All rights reserved. Psygnosis's Microcosm published under license from Psygnosis Limited. ©1993 Psygnosis Limited. Psygnosis and Psygnosis's Microcosm are trademarks of Psygnosis Limited and are used with permission. All rights reserved. Original characters contained in Stellar Fire are copyrighted characters of Dynamix, Inc. Stellar Fire designates a trademark of Dynamix, Inc. All rights reserved. Mad Dog McCree is a trademark and licensed product of American Laser Games, ©1990 and ©1993. STAR WARS® REBEL ASSAULT is a trademark of LucasArts Entertainment Company. STAR WARS is a registered trademark of Lucasfilm, Ltd. Used under authorization. ©1993 SEGA, 3335 Arden Road, Hayward, CA 94545. All rights reserved. Sega CD unit made in Japan. Software made in the U.S.A.

Digital Pictures

get through to the tech support department. The second problem is that many manufacturers have gone out of business in the past five years, so you may not find anyone to talk to anyway.

Fortunately, there is a better way. The vital statistics for most disks are sitting right on the disks themselves.

Every hard disk that's ever been used in a PC has been partitioned, a process usually performed by the Fdisk program. Partitioning was originally created to allow multiple operating systems to coexist on a single hard disk, but you (or the person who sets up your computer) must partition the disk even if that means allocating the whole disk to just one partition. The information that describes how a disk is partitioned is stored in an area called the partition table, which is part of the master boot record, or MBR, which is on every PC disk.

Partition information describes each partition by including both its starting address—which cylinder, head, and sector it starts on—and also its ending address—which cylinder, head, and sector it ends on. Assuming that whoever set up the disk used all of it, the coordinates of the last cylinder, head, and sector on the partition should also be the coordinates of the last cylinder, head, and sector on the disk.

The MBR is always located at cylinder 0, head 0, sector 1. Cylinder 0/0/1 is readable from drive type 1 (a 10MB drive description), and drive type 1 will make any hard disk's MBR readable. It won't make it bootable, but it'll make it readable. So you can boot from a floppy and use a disk utility to read 0/0/1.

Putting this all together, you can find out the vital statistics on any mystery disk by following these steps.

Step 1: Create a bootable floppy disk, and put the Norton program DISKEDIT.EXE on it. It's part of the Norton Utilities (and has been since version 2.0). My explicit instructions will be for version 7.0.

Step 2: Boot from the floppy containing Diskedit.

Step 3: Run your PC's Setup program. Under *hard disk drive type number,* you'll see that it probably says *drive type 0* or *no hard disk.* Change it to *drive type number 1.*

Step 4: Run Diskedit by typing *diskedit c:* at the command line. If you see a message box warning you that Diskedit is in read-only mode and that no changes that you make to the disk with Diskedit will be actually written, that's fine because you don't want to accidentally make things worse by overwriting information on your hard disk. Just press Enter to clear the message box.

Step 5: Diskedit may complain about your hard disk not making sense; that's to be expected, so just tell Diskedit to ignore any problems. Don't let Diskedit make any changes to your system.

Step 6: You'll see a menu across the top of the screen with these options: Object, Edit, Link, View, Info, Tools, and Help. You pull down a menu by pressing the Alt key and the first letter of the menu option, so press Alt-O to pull down the Object menu. The Object menu starts off with the options Drive and Directory. Look for an option that says Partition Table Alt+A. If this option is grayed out, you'll have to choose the Drive menu selection. (If Partition Table Alt+A isn't grayed out, just skip to the next step.)

You'll see a dialog box asking which drive to edit and whether the drive is a logical or physical disk. Select the radio button for Physical disks, and select Hard Disk 1.

Step 7: Now tell Diskedit to get the MBR and show you the partition table inside it. Just press Alt-A to tell Diskedit to load the MBR into memory, and then press F6 to tell Diskedit to show you the partition table within the MBR. You'll probably see one or two partitions; look at the partition whose ending location contains the larger numbers. For example, the disk that I'm looking at reports an ending location of side 15, cylinder 993, sector 63 (what Setup calls heads, Diskedit calls sides). Write down the side, cylinder, and sector numbers.

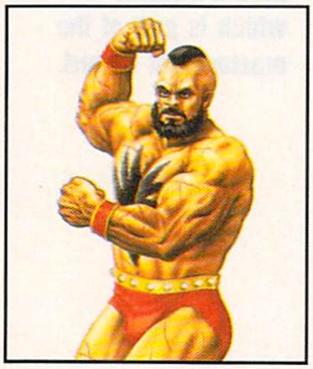
The information that describes how a disk is partitioned is stored in an area called the partition table, which is part of the master boot record.

Step 8: Exit Diskedit (press Esc and then confirm that you want to exit the program).

Step 9: Assuming that whoever originally partitioned this disk used up all the cylinders, that would mean that the last sector on my particular disk was the sector at cylinder 993, head 15, sector 63. That implies that there were 994 cylinders on this disk, because the first cylinder's number is 0, not 1. It also implies that the number of heads is 16, because the first head's number is also 0. For some reason, sectors are numbered starting with 1, not 0 (don't ask me why; I have no idea), so if the last sector is 63, the number of sectors is also 63. So add 1 to the cylinders and sides to get total numbers of cylinders and heads, and don't do anything to the sectors to get total numbers of sectors.

Armed with this knowledge, you can then match these values to your system's drive table to find out which drive type the disk is. On more modern systems, you wouldn't find a drive type; instead, you'd pick drive type 47, the user-definable type, and directly punch in 994 for the cylinders, 16 for the heads, and 63 for the sectors. ❐

SUMO HEAD BUTTS, SONIC BOOMS, WHIRLWIND KICKS, DRAGON PUNCHES, BUTT CRUSHES, FIREBALLS, SPINNING PILEDRIVERS



Street Fighter II™ is a registered trademark of Capcom Co., Ltd.

WILL YOUR PC SURVIVE? WILL YOU?

STREET FIGHTER II™

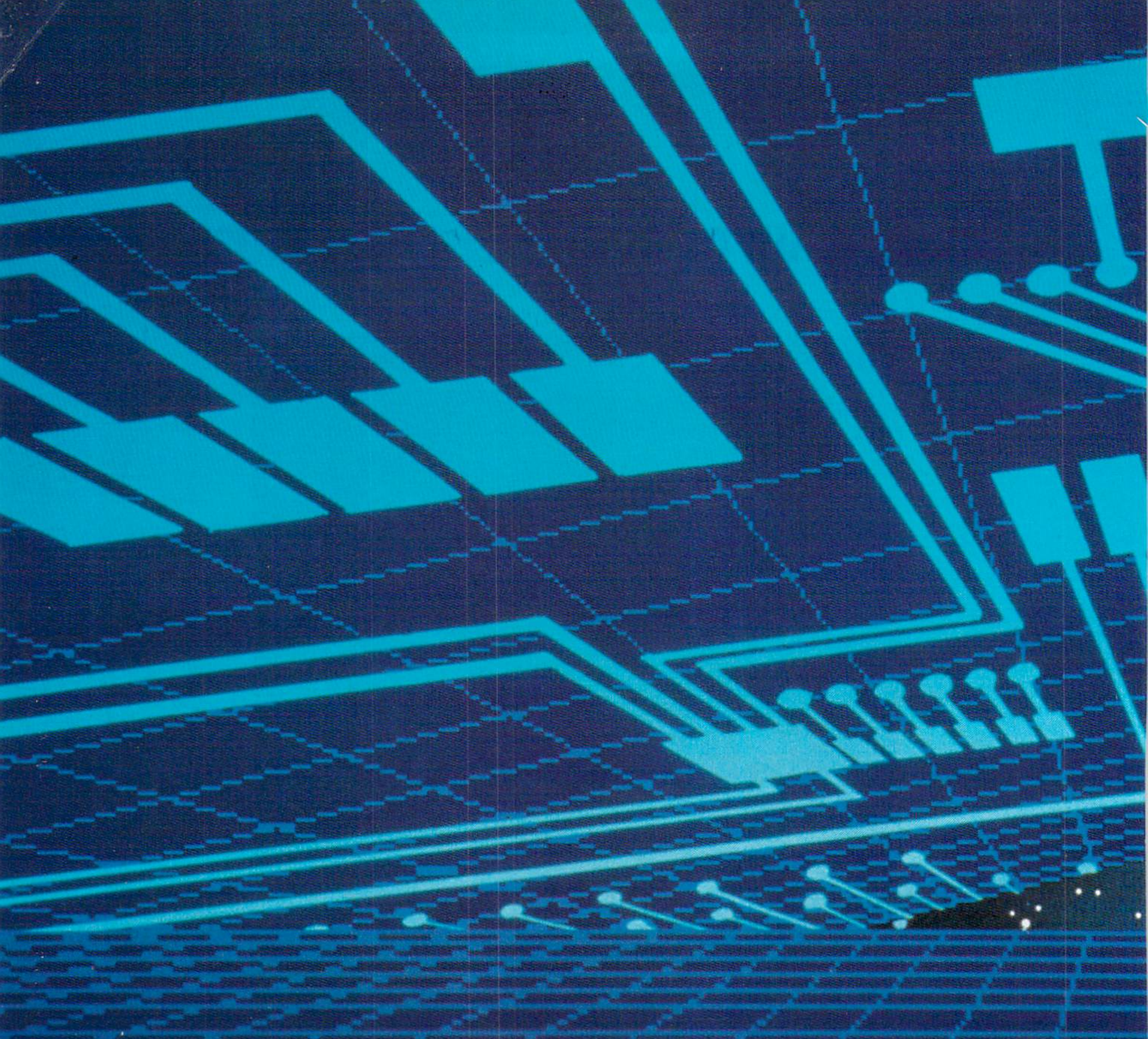
FOR THE PC

CAPCOM®

Distributed by **Hi Tech Expressions**

Available at your local software retailer
or call 1-800-447-6543 to order by
MC/VISA/AMEX

Circle Reader Service Number 140

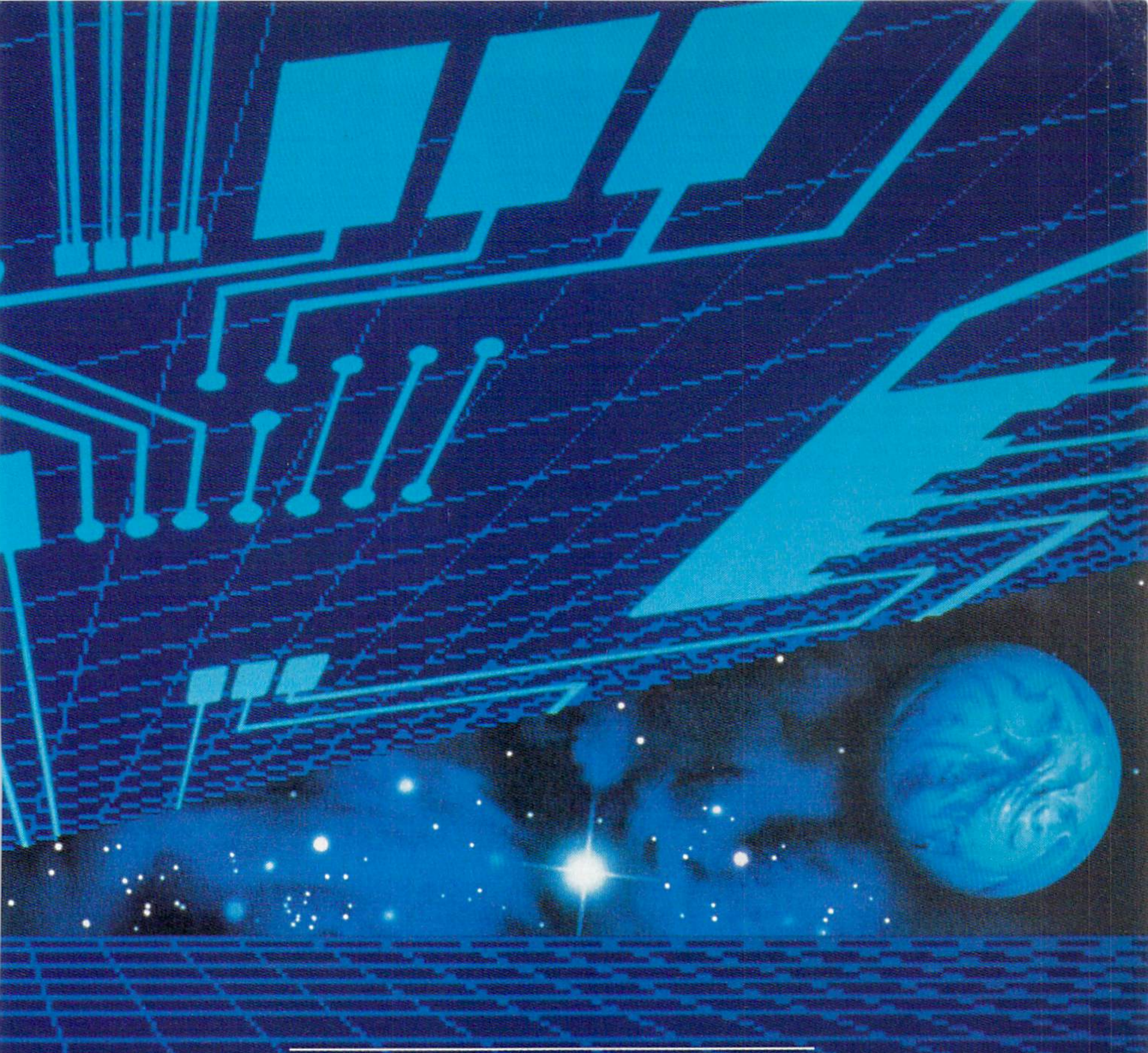


Infinite Expansion

Open up nearly any PC. Chances are, the innards would bring a devilish smile to Dr. Victor Frankenstein's lips. Sound card here, fax/data modem there, SCSI controller over there. Dig through the jumble of ribbon cables, and what do you see? A cutting-edge, 24-bit graphics card chugging away on a slow, 8-MHz, 16-bit bus.

Of all of humankind's great creations, the PC must rank among the most haphazard. Take a poll of your friends. I'd bet that no two of them have even remotely the same setup. With the exception of the disks that we insert in the front and the power cord that we plug into the wall, our computers are as individual as we are. They're machines, yet they're an amalgam of parts and pieces reminiscent of the late-night works of Dr. Frankenstein. Like the good doctor, we must experiment and tweak to

Article By Paul C. Schuytema



The hottest news in computers is arriving by bus.

get our beasts to run and behave; but still, no matter how we try, they remain elusive, unpredictable, and frightening. Like the monster, who would flip out when a torch was waved in his face, our computers have equally potent, equally mysterious phobias. Close one application without saving, or launch a program in compressed form when it doesn't like being compressed, and your beast will turn against you.

How do the parts work together? How does your video card get information from your hard disk? How does your fax/data modem know what to send?

The answer is connectability. Parts connected to more parts, sharing information across standardized pathways called buses. *Bus* is a shortened version of *omnibus connector,* a term utilized in the Precambrian Era of personal computing, when con-

Illustration By Kee Hwa Jeun

nectability first became an issue and standardization had only begun to be a concern.

S-100

The first bus standard was known as the S-100, short for *Standard 100* (so designated because it was the de facto standard and was based on a clip that had 100 pins). Back in 1975, when *Popular Electronics* and MITS (originally a model-rocketry company) decided that it would be a good idea to produce a kit for building a computer, they came up with the Altair 8800, a rather ignoble beast which sold beyond anyone's wildest expectations. Yet this primordial PC was nothing more than a glorified box, an energy leach which communicated through front-panel switches and lights.

To work, it needed connections. The designers thought that making these connections modular—in a bus—would be more efficient than having the connectors on the computer board itself. A bus would also allow third-party manufacturers to produce enhancements for the Altair that the user could simply plug in. So the S-100 bus was born.

Not much planning went into the S-100. In fact, it featured 100 pins simply because MITS happened to get a good deal on a surplus of 100-pin connector clips. Now, planning and forethought dominate the world of PC buses. Committees and manufacturing groups are constantly working on creating new bus standards. Yet, what, really, is a bus? In the simplest terms, a bus is a physical channel (wires, pins, or circuit board paths) between the CPU (Central Processing Unit) and the other components of a computer, such as a disk drive controller or video board.

The ISA Bus

While the S-100 remained the de facto standard for a number of years, and the IEEE (Institute of Electrical and Electronics Engineers) attempted to improve and refine it in 1983, the S-100 had the unfortunate luck to exist in the calm before the revolution. Not until IBM released the PC did the personal computer industry take off. The old PC (and the XT that followed) featured 62-line expansion slots which provided an 8-bit, 4-MHz data path to the CPU. This bus is commonly known as the 8-bit ISA (Industry Standard Architecture; pronounced "*eye*-sah") bus. It wasn't long before IBM upped the ante and introduced the 286-powered AT.

The 286 was a 16-bit CPU, and so the engineers at IBM developed a 16-bit expansion bus. Yet they didn't want to leave the PC users, or that established base of expansion boards, in the dust. So the new bus was an extension rather than a reworking of the old bus. An additional connector was added in line with the old connectors, so a user could plug in an XT board, or a newer AT board. The 16-bit ISA bus was born.

This bus was the data highway between the CPU and the peripheral components, and it provided a 16-bit-wide path that operated at 8 MHz. In the early days of the AT and clones, a speed of 8 MHz wasn't such a bad deal, since it was the speed of most processors. It's difficult to remember in this day and age that the 286 CPU of the original AT—for *Advanced Technology*—was an 8-MHz chip. Later, as CPUs gained speed, some manufacturers attempted to match the bus speed with the CPU, with unpredictable, even dangerous, results. Eventually, 8 MHz became the standard speed for the ISA bus. This speed is not much of a disadvantage for such things as modem boards, which operate at slow speeds anyway. Instead, the limitation is felt when a memory, video, or SCSI board, which has the potential to keep up with the processor, must be reined down to 8 MHz.

Darwinian Revolution

Currently, the ISA bus is the industry standard, based on sheer numbers alone. Yet this bus's limitations proved to be a turning point in the evolution of the PC.

Most 486 PCs still communicate with their components through an ISA bus. As a result, most boards will work on most computers, offering a myriad of choices for the user. Yet this standard forces a 50-MHz, or even 66-MHz, 486 to communicate with its expansion cards at 8 MHz. If Dr. Frankenstein were to look over our creation, he'd be shocked to see the equivalent of his giant's cardiopulmonary system fitted with the smallest of capillaries and nothing else.

The ISA bus is far from being ready for the charnel house, however. Recently, Microsoft and Intel announced a plug-and-play modification for the ISA bus specification. While not changing the speed of the bus, this enhancement will mean easier installation of components. When it comes time to install a new board, you won't have to fiddle with DIP switches, trying to find that combination of addresses that makes the card work in concert with other peripheral devices. Instead, you'll plug in a board and let software set it up. This type of autosensing is a key element of the more advanced expansion buses and has been employed for several years in the NuBus on Apple's Macintosh computers. These new plug-and-play boards should start popping up near the end of 1993.

Glossary

bus. Most basically, a physical pathway between the various hardware devices that make up a computer. A computer can have several buses, such as the CPU's data bus, a memory bus, a local bus, and an expansion bus.

bus master. An expansion device which temporarily takes charge of the bus, controlling data transfers in and out of memory without help from the CPU.

data throughput. The actual amount of real information that is either transmitted through a bus or processed by a device. Not all information that leaves a bus necessarily counts as real information; some information might be redundant or be part of some error-checking system.

intermediate bus. A bus connected to the CPU's data bus through a buffering controller which is responsible for the speed and timing of the data operations. The PCI bus is an example of an intermediate bus.

local bus. A hard-wired expansion bus between a connector and the CPU data lines. A local bus allows a device, such as a video controller, to operate at the same speed as the CPU.

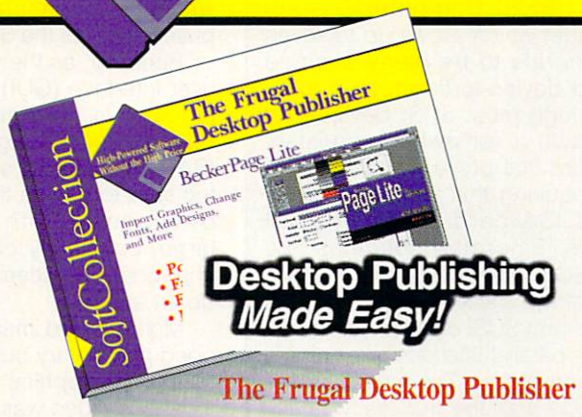
megahertz (MHz). A unit of frequency representing one million cycles per second, often used to describe a computer's clock rate or its raw, internal speed.

plug-and-play card. An expansion card that configures itself, either with an installation program or during boot-up.

SCSI. Small Computer System Interface. SCSI could be considered another bus standard, but one that requires a controller to fit into a computer's standard bus socket. A SCSI interface is often used to control hard drives or CD-ROM drives.

SoftCollection

High Powered Software without the High Price


The Frugal Desktop Publisher
High-Powered Software Without the High Price
BeckerPage Lite
Import Graphics, Change Fonts, Add Designs, and More
SoftCollection
Page Lite
Desktop Publishing Made Easy!

The New SoftCollection from Abacus

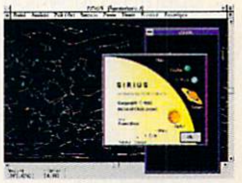
The Frugal Desktop Publisher

Create newsletters, brochures, ad literature, and more with this **feature-filled** Windows page layout package. Bezier curve drawing, polygon filling, import graphics, change fonts, add designs, more.
Item# B217 $19.95.

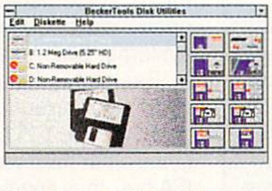
Don't Forget Graphics

Add Impact with Graphics
Each package contains 100+ ready-to-use, professionally created clipart in PCX format.
Item# B224 $15.95
Item# B225 $15.95 *More Graphics*

Art Masterpieces on Your PC
From Monet and VanGogh to Michaelangelo and others, their work is here for you to use in BMP format.
Item# B226 $15.95.

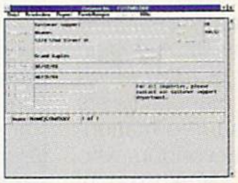


Astronomy Star Finder for Windows!
Turn your PC into a Windows planetarium. Complete database of 10,000 stars (with technical info) from 200 places worldwide.
Item# B215 $19.95.



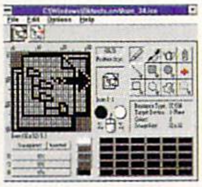
Work Faster and Easier with Floppies
One-pass diskette copy, multiple diskettes, copy 3-1/2" to 5-1/4" and vice versa, much more.
Item# B211 $18.95.

Windows Tune Up
Analyze and reconfigure your system to supercharge Windows with this slick, convenient group of utilities.
Item# B216 $18.95.

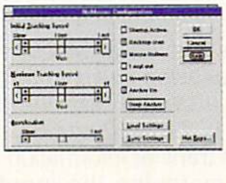


DB Lite
Manage your addresses, contacts, books, VCR tapes and more. This fast and simple database manager has a report generator and more.
Item# B222 $17.95.

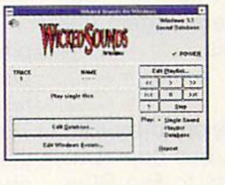
DataCruncher
Fast access to all compression programs. Here's a simple way to run PKZIP, LHARC, ARJ and others from Windows. Pack and unpack quickly without problems.
Item# B214 $17.95.



Icon Eddy
Create, personalize and change icons for your own taste. Works with EXE and DLL files. With icon library and screen capture to a 32x32 icon, more.
Item# B219 $17.95.



Run Windows Without a Mouse
Software that cuts the mouse cords from your notebook computer. Navigate with cursor keys. Superfast, adjustable speed, works with all Windows applications.
Item# B212 $19.95.



dB's Sound Studio
Make Windows scream, literally. With sounds, effects and wave manager. Windows becomes lively and fun with 40+ new sounds.
Item# B221 $19.95.

Wicked Windows Pranks
Outrageous puzzles, pranks and games that will make everyone laugh. The most hilarious collection of fun yet for Windows.
Item# B227 $19.95.

Original Software, Not Shareware. Available at book and software stores everywhere or have your dealer call us. To order directly call 1-800-451-4319.

Order Toll Free 1-800-451-4319

Abacus
Dept. C11, 5370 52nd Street SE, Grand Rapids, MI 49512
Phone: (616) 698-0330 • Fax: (616) 698-0325

See Us At
COMDEX/Fall '93
Las Vegas Convention Center Booth #100
November 15—19, 1993
Las Vegas, Nevada USA
Circle Reader Service Number 194

Please rush me the following items:

Item#	Title	Price
___	___________	_____
___	___________	_____
___	___________	_____
___	___________	_____
___	___________	_____

Subtotal: _____
MI orders include 4% sales tax: _____
In US & Canada add $5.00 shipping: _____
Foreign orders add $13.00 per item: _____
Total amount (US funds): _____

For fast delivery Order Toll Free 1-800-451-4319 EXT. 311, or FAX (616) 698-0325
Or mail this coupon to: Abacus, 5370 52nd Street SE, Grand Rapids, MI 49512

Method of Payment: ☐ Visa ☐ Master Card ☐ Am.Express ☐ Check / M.O.
Card#: _______________ Expires: ___/___
Name: _______________
Company: _______________
Address: _______________
City: _______________ State: ___ Zip: ___
Phone#: _______________ Fax#: _______________

☐ Yes, please rush your free catalog of PC books and software.

Dept.C11

The MCA Bus

IBM took notice of ISA's shortcomings. When the first of the 32-bit Intel CPUs—the 386—appeared, IBM incorporated a new 32-bit bus architecture into its PS/2 line of computers: the MCA (Micro Channel Architecture) bus.

The MCA bus is software-compatible with the ISA bus, but that's where the similarities end. IBM attempted to make a bus that would grow with the advances in hardware, featuring a tight bundle of specifications and the ability to perform bus mastering (an operation in which a component actually supersedes the CPU and has free rein of the bus for a time, greatly speeding up operations). The MCA bus also allows components to enjoy direct memory access instead of putting in requests for memory access via the CPU.

Yet for all its technological advancement, the MCA bus is already on its way out, atrophying in the high-speed world of computer advancements. The MCA bus is not physically compatible with any other bus; a board must be specifically designed for use with the bus. The MCA design specs are the property of IBM, which is not providing board manufacturers with easy access to the information. Basically, any third-party vendors who wish to manufacture MCA boards must re-create the bus themselves, spending precious R & D dollars, and then pay IBM a percentage of the gross sales of the board for the privilege of using the bus. As anyone who watches the PC market can tell you, that procedure is unlikely to gain the MCA bus any champions.

EISA Bus

The MCA bus was developed by IBM to speed up expansion bus operation and to bind developers to Big Blue (as IBM is known in the industry). But it caused resentment among other computer makers who objected to its nonstandard design and were rankled by the notion of paying IBM a premium. As a reaction to the MCA bus, a group of makers of PC clones and compatibles got together and developed a competing standard, one which was both hardware- and software-compatible with the ISA bus. They dubbed the new standard the EISA (Extended Industry Standard Architecture) bus.

Physically, an EISA (pronounced "*ee*-sah") expansion slot looks the same as an ISA slot, except that it's deeper. An ISA card will fit into the slot, connecting with one set of pins, while an EISA card will fit further into the slot, connecting with the EISA pins. The bus will allow quite a number of expansion cards to run concurrently on a system, like the ISA bus. The EISA bus is a 32-bit bus, meaning that it can transfer information in 32-bit chunks, matching the input/output (I/O) of the 386DX and 486 processors. The EISA standard, like MCA, also supports bus mastering.

EISA does have two inherent problems, however. To insure ISA compatibility, the bus must operate at 8 MHz. Also, since an EISA board fits into deeper slots, an EISA system cannot easily see differences between ISA and EISA boards on the same system—setting the user up for some potential addressing conflicts.

Local Bus

A local bus is a data path which is connected directly to the CPU's own data bus and operates at the speed of the CPU. When computer evolution was in its earliest stages, most buses were of the local variety. The data channels were purely proprietary in nature, designed for a particular version of a particular machine. As computers became more commonplace, and many manufacturers were creating all types of devices for them, this nonstandardized method fell by the wayside as manufacturers adopted buses such as the S-100 bus.

Recently, as the boom in graphical user interface (GUI) computing hit the industry, a performance bottleneck became increasingly apparent. The ISA bus's 8-MHz speed was simply too slow to handle the video demands of Windows, with its monstrously large, constantly changing bitmaps. The local bus seemed once again to be an answer.

Motherboard manufacturers developed proprietary buses designed to fit their own graphics accelerators, and local-bus video was born. Take a look at the mail-order computer ads from the summer of 1992. You'll find that ads for local-bus video systems abounded. (If you look very carefully, you'll find that perhaps one in ten of these systems—the most expensive ones—were touted as VESA local-bus systems. But more about this later.)

Basically, these local-bus systems were task-specific buses connected directly to the CPU's data bus before any of the other hard-wired connections or the ISA bus, thus improving performance.

While one problem was solved, however, another more serious problem surfaced. This bus had no true, binding standard. Local-bus cards bought from one company would not work on another company's computer. And in the fly-by-night world of PC clones, if a company went out of business, the consumer was out of luck in finding updated drivers to make the most of the high-speed video. I purchased a computer during that summer; it wasn't advertised as a local-bus system, but the motherboard does feature two local-bus slots. Unfortunately, the OEM company is now out of business, and the motherboard was manufactured in a faraway country, so the local bus is now only a vestigial organ on my machine, an appendix that does neither harm nor good.

VL-Bus

Fortunately, the local-bus concept met with enough support to necessitate the development of a standard bus configuration. Enter VESA (Video Electronics Standards Association), an organization which represents the interests of more than 60 computer and component manufacturers, and which is developing an industrywide implementation of the local bus.

Physically, the 112-pin connectors

When Is a Bus Not a Bus?

Two other interesting bus alternatives deserve mention. One is the SCSI (Small Computer System Interface) which allows up to seven peripherals to be daisy-chained (linked device-to-device)—in theory, though most SCSI devices for PCs have a somewhat proprietary standard that prevents daisy-chaining, requiring that you use a dedicated ISA card for each SCSI device. Emerging solutions like CorelSCSI and SCSIWorks make it possible to daisychain even these recalcitrant SCSI devices, however.

The parallel interface is emerging as a sort of bus. The mother of this invention was the necessity to link peripherals to pre-PCMCIA laptops. Most of these computers had parallel interfaces, most of which were wired in such a way as to provide enough control to drive a sound card or a CD-ROM drive (for example).

Although SCSI is a brilliant idea for linking peripherals to a very small computer (one without room for an internal bus), its implementation in the PC has made it a minor pawn in the bus game. And although the parallel interface was the focus of a lot of inventive design for a year or so, it lost its spotlight when the PCMCIA standard emerged and was instantly embraced.

—ROBERT BIXBY

for the VL-Bus are placed in line with the EISA/ISA slots. The VL-Bus is a 32-bit bus which will run at the speed of the processor. Currently, the VL-Bus is optimized for 486 systems up to 66 MHz, but the standard will soon be expanded to support Pentium processors. By operating at the speed of the CPU, the VL-Bus can transfer information at a rate of over 100MB per second. The bus, like MCA, EISA, and PCI (see below), supports bus mastering.

The VL-Bus is designed primarily to provide a rabbit-quick connection for video cards, but it can also be used for other high-speed applications such as SCSI controllers or ultrafast ISDN devices. Only three components may use the VL-Bus on one computer—which is just as well, since running three devices will slow the system down considerably. This probably won't be much of a problem for single-station computers for several years, but it might be more limiting for a file server.

PCI Bus

The latest evolution of the PC bus is Intel's PCI (Peripheral Component Interconnect) bus. Like the VL-Bus, the PCI is a standard created by a group representing the computer industry, this time the PCI Special Interest Group, headed up by Intel.

PCI is an attempt to move bus technology forward in one large step. Instead of being a local bus, connected directly to the CPU's data bus (and being tied to the processor's generation), it's an intermediate bus, which is controlled by a dedicated buffering chip. The bus is still a full-featured 32-bit data path which can operate at 33 MHz and claims (on paper, as of this writing) a data throughput speed in excess of 130MB per second.

The bus is designed to connect a wide array of components and has been forward-engineered to take advantage of 64-bit processors (read *Pentium*), cranking the speed up to 264MB per second. The bus is also engineered to work at the 3.3-volt power level of today's power-savvy processors and notebooks. The PCI version of bus mastering allows a device to utilize the bus while the processor is still processing other data.

The PCI bus is designed for plug-and-play installation, meaning that no PCI board, whether video, HDTV, or SCSI, will have on-board jumpers to be set and reset. Everything is configured through software. The PCI bus will also allow shared slots, meaning that the PCI connector is placed in line with the ISA/EISA connectors, but it will not disable them. It is possible, then (for example), for a single board to contain a PCI video controller and an ISA sound device.

The PCI bus is designed to handle both motherboard-mounted devices (such as a single-chip VGA system) and expansion cards; a typical PCI bus could handle three cards and four motherboard-mounted devices before becoming overloaded.

Not only has PCI has made headway into the future of the PC, but Apple has committed to the PCI bus and has joined the Special Interest Group. Soon, Apple's Macintoshes will be featuring both NuBus and PCI capabilities. It's just another sign of the evolution toward a completely modular, standardized PC architecture.

Transit Authority

On the one hand, computer expansion buses are abstract concepts; on the other, they are horrendously technical conglomerations of voltage specifications and data paths. For an educated PC user, a knowledge of the basic differences and design concepts of the various buses can make that next board or computer purchase less of a mystery tour.

So, which bus is best? That's as loaded a question as you're likely to find. One thing is certain: You should stay away from proprietary local-bus systems. Their life expectancy is just too unpredictable. Is ISA dead? Not by a long shot—and the new plug-and-play standard should help it remain the de facto standard for several years to come. Even though the 8-MHz speed may seem ponderously slow when compared to VL-Bus or PCI performance, the ISA bus is a data highway that's more than wide enough for 90 percent of your computing needs. If you do a lot of graphics work, or if you're like me and live in Windows, either the VL-Bus or PCI bus would be a smart bet on your next system. The EISA bus probably fits into the smallest useful niche, as the bus of choice for LAN file servers. The 8-MHz speed is more than adequate, and the 32-bit-wide pathway will prevent bottlenecks.

As for the future of PCs, the one-system/one-bus approach will probably no longer hold. According to Mike Bailey, chairman of the PCI Special Interest Group steering committee, computers four to five years down the road will probably feature a mixture of three buses: an ISA or EISA bus for standard devices, a local or intermediate high-performance bus (either PCI or VL-Bus) for such things as display and SCSI controllers, and a PCMCIA bus for multisystem connections. For the moment, it might be best to wait and watch, and see which bus garners the most support in terms of products being produced. ❏

PCMCIA

In the world of buses, there's another standard which is rapidly growing in prominence but which isn't necessarily a bus, in the true sense of the word. I'm talking about the PC Card standard, sometimes called the PCMCIA, after the standards organization (the Personal Computer Memory Card International Association) that developed it.

The PC Card is designed primarily as an expansion system for subnotebook computers, but the flexibility of the bus means that PC Card devices will start popping up everywhere, from camcorders to desktop PCs.

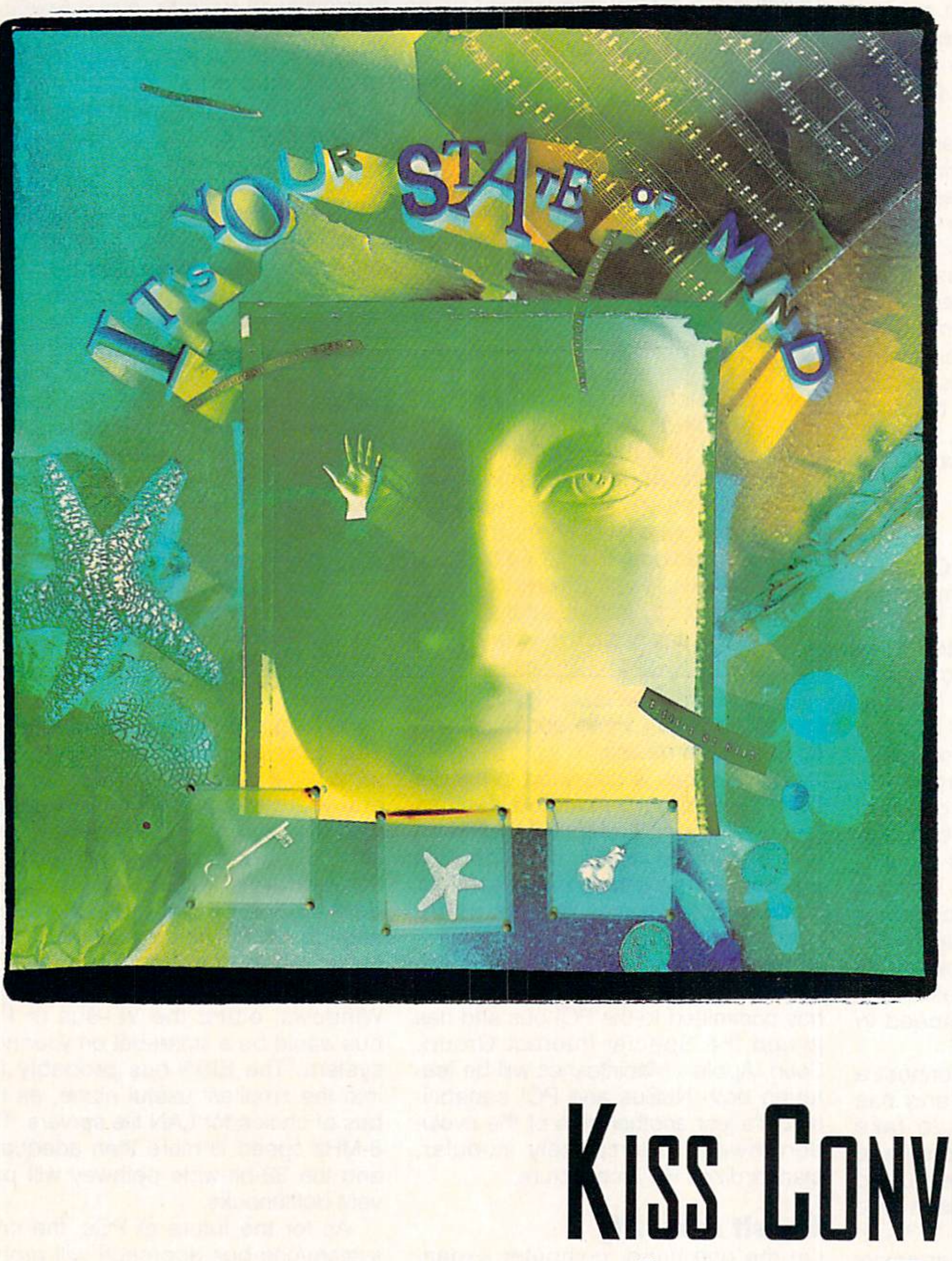
The PCMCIA 2.0 Standard, formalized in September 1990, is more than just a physical bus technology; it's a standard that describes file formats, data structures, software links, and standards for accessing the card's hardware features, regardless of the type of system in which the card resides. The specification even allows for program code to execute directly from the card, independent of any system memory.

As a bus, the PCMCIA standard is a relatively primitive 16-bit pathway, but the PC Card can access up to 64 megabytes of memory, and a system could, in theory, have over 4000 cards connected to it (think of the potential for building surveillance systems!).

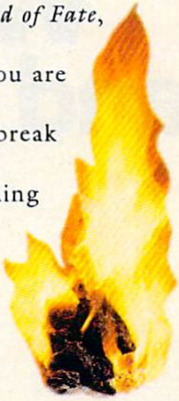
The PC Card is another plug-and-play card that will configure itself, but it's also more robustly designed than any of the standards mentioned in the article, meaning that unexpected power-downs, or even putting the card in its slot upside down, won't hurt either the card or the system.

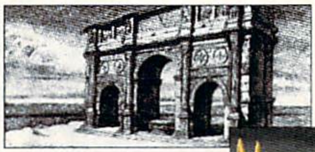
The area of a PC Card is roughly the same as that of a credit card, but the card comes in three thicknesses. The thinnest, 3.3 mm, is for memory cards and nonvolatile storage systems (which keep their contents even when the computer's power is turned off). The 5-mm thickness is for such devices as modems, and the thickest, at 10.5 mm, can house miniaturized hard drives and other components that require more room.

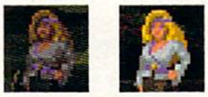
FABLES & FIENDS: THE HAND OF FATE IS A TRADEMARK OF WESTWOOD STUDIOS, INC. © 1993 WESTWOOD STUDIOS, INC. VIRGIN IS A REGISTERED TRADEMARK OF VIRGIN ENTERPRISES, LTD. ALL RIGHTS RESERVED.


IT'S YOUR STATE OF MIND

KISS CONVENTIONAL LOGIC GOODBYE







Shadow Sunlight

Now you see it. Now you don't. The land of Kyrandia is disappearing piece by piece and all the evidence points toward one perilous conclusion: a curse. Thus begins *The Hand of Fate*, second in the *Fables & Fiends*™ series, where you are the offbeat, young mystic who must voyage to the center of the world to break the spell. Out of sync and out on foot, your aberrant journey reveals nothing is what it seems. Everything is what it isn't. And you can count your friends on one hand. Literally. Conspiring to push the twisted edge of cinemagraphic entertainment, Westwood Studios has designed more puzzles and gameplay in the first few chapters of *The Hand of Fate* than in all of *The Legend of Kyrandia*™. The most advanced graphics on the market are first pencil tested, then painted on-screen to surrealistic perfection. Breakthrough *Trulight* technology illuminates each scene more cinematically for a fuller, fourth dimensional picture. The new *State of Mind System*, along with superior intuitive interfacing, enables you and over 50 characters to change your mind, mood and mayhem based on preceding events. Don't just play with your mind. Change the way your mind plays.

Grasp *The Hand of Fate* and kiss conventional logic goodbye.

THE HAND OF FATE™

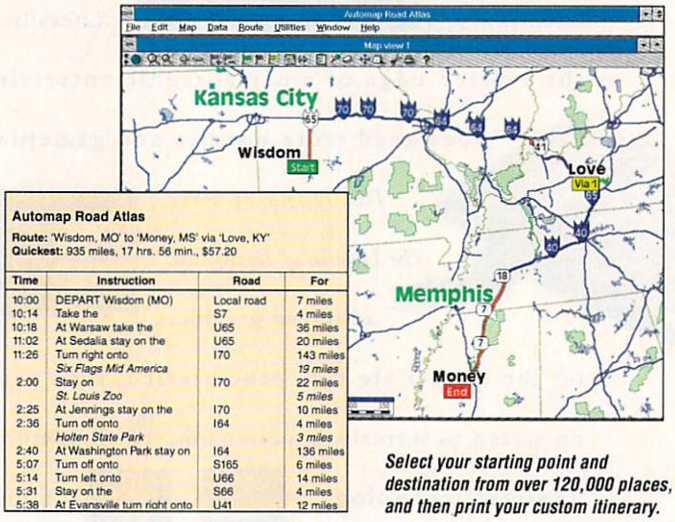
Westwood™
STUDIOS

DISTRIBUTED EXCLUSIVELY BY
Virgin

Circle Reader Service Number 195

Discover the way to Wisdom, Love, and Money in 10 seconds.

Traveling to Wisdom, Missouri? How about Love, Kentucky? Or Money, Mississippi? Whatever your destination, first take a short trip to your PC. Load the new version of Automap® Road Atlas for Windows or DOS, and you're off on your adventure. In seconds, Automap will help you plan the ideal route to over 120,000 places.

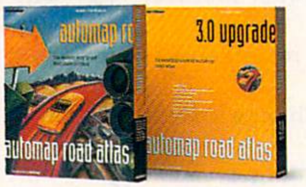


Automap Road Atlas

Route: 'Wisdom, MO' to 'Money, MS' via 'Love, KY'
Quickest: 935 miles, 17 hrs. 56 min., $57.20

Time	Instruction	Road	For
10:00	DEPART Wisdom (MO)	Local road	7 miles
10:14	Take the	S7	4 miles
10:18	At Warsaw take the	U65	36 miles
11:02	At Sedalia stay on the	U65	20 miles
11:26	Turn right onto	I70	143 miles
	Six Flags Mid America		*19 miles*
2:00	Stay on	I70	22 miles
	St. Louis Zoo		*5 miles*
2:25	At Jennings stay on the	I70	10 miles
2:36	Turn off onto	I64	4 miles
	Holten State Park		*3 miles*
2:40	At Washington Park stay on	I64	136 miles
5:07	Turn off onto	S165	6 miles
5:14	Turn left onto	U66	14 miles
5:31	Stay on the	S66	4 miles
5:38	At Evansville turn right onto	U41	12 miles

Select your starting point and destination from over 120,000 places, and then print your custom itinerary.



automap road atlas
The easiest way to get from here to there

Automap puts you in the driver's seat, letting you select how you want to drive. Whether it's the quickest, shortest, or most preferred route. Laid-back or lead foot. Simply push a button to print out detailed maps and directions. At around $60, it'll pay for itself a short way down the road. Look for Automap Road Atlas at your nearest software retailer, or call **1-800-440-MAPS.**

AUTOMAP®
1309 114th Avenue SE, Suite 110
Bellevue, Washington 98004-6999
Tel: (206) 455-3552
Fax: (206) 455-3667

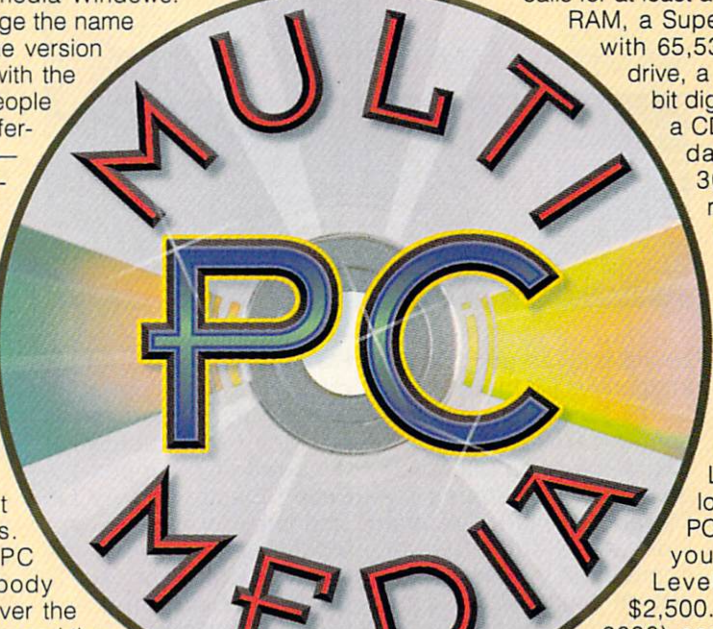
© Copyright 1988-1993, NextBase Ltd. Automap is a registered trademark of NextBase Ltd. Distributed by Brøderbund Software, Inc. Upgrades for existing users are available from your local retailer.

Circle Reader Service Number 137

WHAT MAKES A FAST FORWARD MULTIMEDIA PC?

BY DAVID ENGLISH

Just when you thought it was safe to buy an MPC (Multimedia PC), they introduce MPC Level 2. What's going on here? What do you really need to put together a decent multimedia PC?



First, a bit of multimedia history. When Microsoft, Tandy, AT & T, NEC, Creative Labs, Media Vision, and a bunch of other companies announced the multimedia PC in November 1990, they set the standard low so that they could sell a lot of MPCs at a reasonable price. The initial MPC standard called for a 10-MHz 286 or faster processor. At the time, there was a lot of talk about a 286 not being up to the task, but Microsoft's official line was that if a 286 could run Windows, it should also be able to run Multimedia Windows. (Microsoft tried to discourage the name *Multimedia Windows* for the version of Windows that shipped with the new MPCs. Fearing that people would be confused by different versions of Windows—clearly no longer a concern—the company tried to push the more politically correct *Microsoft Windows graphical environment 3.0 + Multimedia extensions 1.0.)* By September 1991, MPCs and MPC upgrade kits were shipping, and the MPC standard was off to a slow-but-steady start.

The year 1992 brought three important changes. First, the Multimedia PC Marketing Council, the body that was given authority over the MPC standard, quietly increased the minimum required processor to a 16-MHz 386SX. Second, Windows 3.1 brought the multimedia extensions (most importantly, the sound-card and CD-ROM drivers) into mainstream Windows. And finally, we saw a gradual growth in the number of innovative CD-ROM titles, with such standouts as Just Grandma and Me, Compton's Interactive Encyclopedia, and Microsoft Cinemania.

In 1993, the titles have expanded to include such luminaries as The 7th Guest, The Animals!, and Microsoft Encarta. The year has also brought us the MPC Level 2 specification, which promises to raise our multimedia applications to a whole new level.

Briefly, the MPC Level 1 standard calls for at least a 16-MHz 386SX with 2MB of RAM, VGA display (640 x 480 with 16 colors), a 30MB hard drive, a sound card capable of 8-bit digital sound, and a CD-ROM drive that can move data at a sustained rate of 150K per second with a maximum average seek time of 1000 milliseconds. The two weakest links of the Level 1 chain are the processor (these days, you need at least a fast 386DX) and VGA display (many MPC titles either don't run in 16 colors or look pretty awful when they do; you really need 640 x 480 with 256 colors).

The new MPC Level 2 specs are designed to better accommodate the MPC titles that include photorealistic graphics and full-motion video clips (usually Video for Windows or QuickTime for Windows). The standard calls for at least a 25-MHz 486SX with 4MB of RAM, a Super VGA display (640 x 480 with 65,536 colors), a 160MB hard drive, a sound card capable of 16-bit digital sound (CD quality), and a CD-ROM drive that can move data at a sustained rate of 300K per second, has a maximum average seek time of 400 milliseconds, and is CD-ROM XA ready and multisession capable (for use with Kodak's Photo CDs).

Level 1 machines will still be available as low-end starter MPCs, but you should consider buying a Level 2 machine if you're looking to buy a multimedia PC. Given today's low prices, you should be able to find Level 2 MPCs for as little as $2,500. Creative Labs (408-428-6600) and Media Vision (800-348-7116) have already announced Level 2 upgrade kits that include a 16-bit sound card and double-speed CD-ROM drive. Creative Labs' Sound Blaster DigitalEdge CD package costs $999, while Media Vision's Fusion Double CD-16 and Pro 16 Multimedia System cost $799 and $1,199, respectively. All three packages include a bundle of CD-ROM–based multimedia applications. Currently, Level 1 upgrade packages are available for as little as $400.

If your multimedia PC meets the Level 2 standard in some respects but falls back to Level 1 in other respects, don't worry that you won't be able to run MPC software. Most titles won't be written exclusively for Level 2, but will simply support the higher-standard components where available. ❑

OPEN WINDO

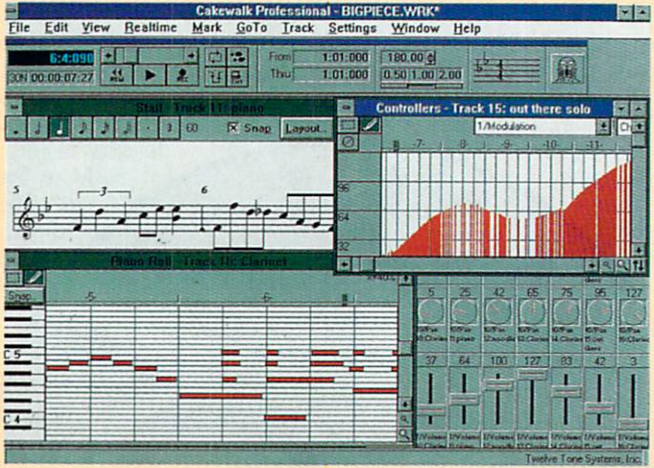
BY DAVID ENGLISH

You wouldn't watch TV with the sound turned off, yet most of us have the sound turned off in Windows. Granted, Windows isn't yet an all-talking, all-dancing, all-singing kind of operating system, but there's a lot you can do with Windows and a half-decent sound card. Over the next few pages, we'll explore what kind of hardware you'll need in order to add sound to Windows, which kinds of audio Windows can work with, and which software lets you create and manipulate this audio.

All in the Cards

Before we talk about the wonderful things you can do with Windows and sound, we need to discuss what kind of hardware you'll need. The quick answer is a sound card and a pair of speakers. The sound card can be either an 8-bit or a 16-bit card (or one of the in-between 12-bit cards), though 16-bit cards are inexpensive enough that I wouldn't recommend anything else these days.

When you hear people talk about 8-bit and 16-bit sound cards, they're not talking about cards that require an 8-bit or 16-bit bus. They're talking about the sampling rate of the card. A 16-bit card can theoretically sound as good as an audio-CD player (theoretically, because electrical interference from the motherboard and adjacent cards can degrade the sound). With its lower sampling rate, an 8-bit card will have more inherent noise and won't be capable of reproducing the high frequencies that a 16-bit card can handle. In other words, a 16-bit card can sound as good as the CD player in your home stereo system, while an 8-bit card can sound only as good as an inexpensive FM radio.


Cakewalk Professional - BIGPIECE.WRK*
File Edit View Realtime Mark GoTo Track Settings Window Help
From 1:01:000
Thru 1:01:000
Staff - Track 11: piano
Snap
Layout...
Controllers - Track 15: out there solo
1/Modulation
Piano Roll - Track 11: Clarinet
C5
C4
Twelve Tone Systems, Inc.

The sampling portion of a sound card uses a DAC (Digital-to-Analog Converter) and an ADC (Analog-to-Digital Converter). This provides the Sound Blaster compatibility. Most cards include Sound Blaster compatibility so you can play the wide variety of DOS games that use it for realistic music, voice, and sound effects. Most cards also include an FM-synthesis chip (usually Yamaha's OPL2 or OPL3) for Ad Lib compatibility. This allows a sound card to play back the computer-sounding music and sound effects that DOS games have been using since the middle 1980s.

Microsoft's specifications for Windows audio include the 8-bit DAC and ADC of the Sound Blaster and the FM synthesis of the Ad Lib card as a minimum standard. Most sound cards designed specifically for Windows also support the Sound Blaster and Ad Lib standards for DOS games, though some don't. A few cards, such as Turtle Beach's MultiSound and Microsoft's Windows Sound System, will soon offer DOS game compatibility through a small TSR program that you'll load when you boot your system.

Five-Star General

Many sound cards significantly improve on the FM synthesis portion of the card by offering General MIDI, either built in or as an optional chip set. General MIDI uses the actual sounds, usually stored in ROM, to re-create musical instruments. When an FM chip creates a trumpet, it approximates the sound mathematically. When a General MIDI device creates a trumpet, it calls up the actual wave information based on the recording of a real trumpet. Most of today's professional synthesizers use this same technology to create musical instruments that are virtually indistinguishable from the originals.

General MIDI brings this highly realistic sound to inexpensive consumer products, such as computer sound cards. By 1994, the majority of sound cards should have General MIDI built in. Yamaha has even announced a new version of the FM chip, called the OPL4, that includes General MIDI.

For a preview of just how good General MIDI can sound in a computer program, check out the best-selling CD-ROM game, The 7th Guest. When installed with a General MIDI device, its music sounds like a fully orchestrated movie score.

If your present sound card doesn't have General MIDI or offer it as an add-on, don't worry. Most sound cards offer a MIDI interface that can hook up to an external General MIDI device, such as Roland's Sound Canvas ($399–$895), Yamaha's TG100 ($449), and Yamaha's Hello Music! ($449).

Weakest Link

So you've bought a great-sounding 16-bit sound card and maybe even have General MIDI. Now what? If you're like most of us, you'll scrimp on the speakers, possibly hooking up an old pair lying around the house. You can do that, of course, but you should consider investing in a pair of powered speakers that are magnetically shielded. You'll want powered speakers because the two- to four-watt amplifier on most sound cards just doesn't give you much volume. In fact, you can barely hear your sound card with many small speakers. Some cards also provide a separate output that completely bypasses the often-inferior built-in amplifier. You'll want magnetically shielded speakers because the magnets in your speakers can permanently scramble the data on disks you place on or even near them, as well as temporarily distort the image on your monitor if you place your speakers beside it.

How much should you pay for a pair of powered speakers that are magnetically shielded? They start at about $40 for the least expensive pairs from companies such as Koss and Labtech. Yamaha (714-522-9011) makes an excellent pair for $149, called the YST-M10. For top-of-the-line sound, check out the Altec Lansing Multimedia ACS-300 (Altec Lansing Consumer Products, 800-258-3280, $400 a pair) and the Power Partner 570 (Acoustic Research, 800-969-2748, $475 a pair). The Yamaha, Altec, and Acoustic Research speakers sound so good that you may also want to use them with your CD player or Walkman.

THE MIRACLE
PIANO TEACHING SYSTEM
MIRACLE
MIRACLE

The Sound and the Fury

Now that you have an idea of the hardware you'll need, let's look at the kinds of sound Windows can produce. Windows 3.1 supports two major categories of sound: waveform audio and MIDI audio. Waveform audio is recorded sound that's usually stored in files with the WAV extension. Once you associate these files with a program that can play WAV files, such as Windows' Media Player (MPLAYER.EXE) or Sound Recorder (SOUNDREC.EXE), you can simply load up Windows' File Manager, double-click on a WAV file, and hear the sound. Many Windows games and multimedia CD-ROMs use WAV files, so you can give them a listen, copy the ones you like, and alter the sounds using one of the sound-editing programs that we'll look at later in this article.

While MIDI files can play music, much like WAV files, they have a radically different structure—which gives them both advantages and disadvantages. Instead of storing the actual sound, MIDI files contain the control commands for a MIDI-controlled musical instrument. These control commands consist mainly of note-on, note-off, pitch-change, instrument-change, and volume information. Because a MIDI file stores only the bare essentials of a musical performance, the music in a MIDI file can take as little as 1/100 the space on your hard drive that music of the same quality would take in a WAV file. On the other hand, because a MIDI file contains only control commands, it's highly dependent on the quality and availability of a MIDI device. WAV files sound essentially the same with any sound card, while MIDI files can vary dramatically according to the quality of the MIDI-based musical instrument. In addition, WAV files can store any kind of sound, whether it's instrumental music, narration, or sound effects (essentially whatever you can record with a microphone). MIDI files can reproduce only the kinds of sounds that the accompanying MIDI device is capable of reproducing (usually 128 or more specific instrument sounds).

As if that weren't confusing enough, Windows

WS TO SOUND

Home Recording Studio

So you bought a 16-bit sound card, high-quality microphone, and powerful sound-editing program, such as Sound Forge 2.0 or Wave for Windows 2.0. You've put together a first-class digital home recording studio, right?

Assuming your sound card is properly shielded to protect itself from electrical interference from your computer's motherboard and other cards, you really can record audio that sounds as good or nearly as good as an audio CD.

Keep one thing in mind, though. At audio-CD quality (16-bit stereo sampling at 44 kHz), each minute you record will take up approximately 10MB on your hard drive. Before you mix down that new album you're working on, you might want to order an extra-large and extra-fast hard drive (can you say the word *gigabyte* without fainting dead away into your chair?). You'll also need a fast processor to handle the huge amounts of data that will be moving through your machine.

Another solution is to purchase a dedicated recording system such as Yamaha's CBX-D5 Digital Recording Processor. It's controlled by your PC's software, but it uses its own set of SCSI-based hard drives. The CBX-D5 includes a built-in DSP (Digital Signal Processor), has DEQ (Digital EQualization), provides four-track 16-bit recording, and works with any Windows 3.1–compatible PC. Of course, you'll have to fork over $2,995 for the CBX-D5 and another $400–$2,000 for a SCSI hard drive, but you did say you wanted a first-class home recording studio, didn't you?

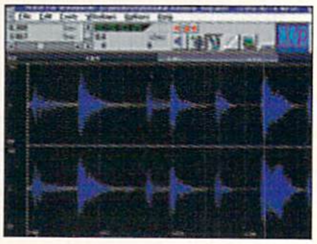
Sound
BLASTER
16 ASP
CREATIVE
With Advanced Signal Processing

Jazz: A Multimedia History, The New Grolier Multimedia Ency-clopedia, and hundreds of other Win-dows-based multimedia applications. You'll be ab-le to capture and play back software-based video files using Video for Windows and QuickTime for Windows. And you'll be able to add audio to your presentations, with programs such as Action! and Compel.

Second, you can add sounds to your various Windows system events. While it's true that this isn't really a serious use of sound, that's the point—to have some fun. It's a way to personalize your computing environment. For instance, I use the computer sound effects from "Star Trek: The Next Generation" for my system sounds. They're short and unobtrusive, and they create a high-tech mood. In the past, I've used HAL 9000 recordings from the movie *2001: A Space Odyssey* ("Human error" for an error message and "I'm completely operational, and all my circuits are functioning perfectly" for a Windows startup sound). Sound Source Unlimited (800-877-4778) sells collections of sounds from both the original "Star Trek" and "Next Generation", as well as a collection of sounds from *2001* ($59.95 each). Micro-soft (206-882-8080) offers similar collections of movie, cartoon, and musical instrument sounds, called SoundBits ($39.95 each).

The third thing you can do with Windows audio is to manipulate sound files. In fact, with a capable 16-bit sound card and sound-editing program, you'll have the makings of a near-studio-quality digital editing system. I'm not exaggerating, either; we're talking about high-quality stereo recording direct to your hard drive, with cut-and-paste editing and nondestructive digital effects, such as echo, reverb, flange, fade, reverse, volume, and pan. Sound-editing packages such as Wave for Windows 2.0 (Turtle Beach, 717-843-6916, $149) and Sound Forge 2.0 (Sonic Foundry, 608-256-3133, $179) let you alter sounds in ways that

Altec Lansing Multimedia ACS-300 speaker system


Wave for Window 2.0

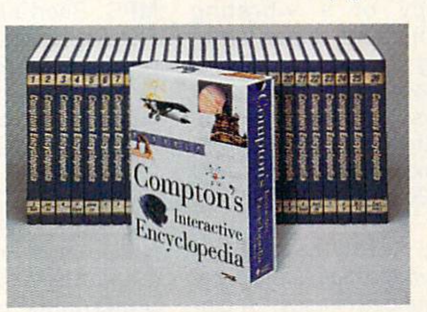
SEE WHY THE WORLD IS TURNING

TO COMPTON'S NEWMEDIA

Compton's Encyclopedia published the first picture encyclopedia in 1922, featuring accurate, concise and highly readable information. Compton's NewMedia published the first multimedia encyclopedia, leading the CD-ROM industry.

INFORMATION HAS NEVER BEEN SO EASY TO ACCESS UNTIL NOW.

Compton's NewMedia offers the world of knowledge with sights and sounds, bringing information to life! The new *Compton's Interactive Encyclopedia*™ 2.0 offers more to the consumer than any other...with over 33,000 of the most up-to-date in-depth articles, 97 exciting video animation montages, thousands of pictures and cross references, nine easy research paths, and the SmarTrieve™ natural language search and retrieval system. Compton's exclusive Virtual Workspace™ allows research to be easily gathered and viewed. The new version also offers a U.S. and World timeline and unique special browsing feature. Stimulate your mind with the encyclopedia that will spark your imagination and give you fast access to a wealth of information!



The new *Compton's Interactive Encyclopedia* for only $395

Compton's Combo: complete 26-volume print set with the electronic CD-ROM for only $495. A first! Get both today!

See why Compton's NewMedia has the world's best-selling CD-ROM title.

COMPTON'S NEWMEDIA

Call 800/862-2206 and order today!

© Copyright 1993 Compton's NewMedia, Inc. Compton's Interactive Encyclopedia, SmarTrieve and Virtual Workspace are trademarks of Compton's NewMedia, Inc.

Circle Reader Service Number 227

40-100013-D

Top Windows Sound Downloads

What are people downloading these days in audio software? Here's a list of some of the most popular audio downloads from CompuServe's Windows Fun Forum (type *winfun*). It's a good indication of what people are doing these days with Windows audio.

Speakr. An alternative to Microsoft's PC speaker driver. Hear WAV files through your PC's internal speaker without a sound card. 5245 downloads.

Wave After Wave 2.5. A WAV file, MIDI file, and audio-CD player for Windows that includes drag and drop, file deleting, and command line playing. 3428 downloads.

Wave Editor. Includes filtering and transform capabilities, as well as FFT transforms. 2619 downloads.

WinWav. Lets you attach WAV files to many Windows system events. Includes quarterly and hourly chimes. 2350 downloads.

WavConv. Converts sound files among the popular sound file formats. 2173 downloads.

CD Player 2.0. Lets you catalog your audio CDs by title, artist, track times, record label, and musical category, as well as play up to 30 selected tracks of your CD from Windows. 2067 downloads.

Whoop It Up!. Attach WAV and MIDI files to Windows applications, message box icons, and system events. 1989 downloads.

Sound Blaster Pro Win 3.1 Drivers. The latest Sound Blaster Pro drivers for Windows. 1888 downloads.

EXCUSE.WAV. A WAV file from "Star Trek: The Next Generation" with Data saying "Excuse me." 1857 downloads.

WinMOD Pro. A MOD file sequence player for Windows. Lets you play MOD format sound files (popular with Amiga computers) on your PC. 1127 downloads.

PC Sound Glossary

ADC. Short for *Analog-to-Digital Converter.* A circuit that converts an analog audio signal into a digital audio signal. See also **analog, digital,** and **DAC.**

analog. An audio signal whose fluctuating voltage pattern reflects the structure of the original sound. See also **digital.**

CD-DA. Short for *Compact Disc-Digital Audio.* Also known as Red Book audio. The CD-quality audio that comes directly from a coventional audio CD or CD-ROM.

DAC. Short for *Digital-to-Analog Converter.* A circuit that converts a digital audio signal into an analog audio signal. See also **analog, digital,** and **ADC.**

digital. An audio signal that has been converted into numbers that no longer directly reflect the structure of the original sound. See also **analog.**

General MIDI. An extension of MIDI that establishes a standard set of 128 instrument sounds that are grouped in a standard order. See also **MIDI.**

Hz. Short for *hertz.* A unit used to measure the frequency of a vibrating object, such as a violin string or the cone in a speaker. Also known as cycles per second. The human ear can hear from approximately 20 Hz to 20 kHz (20 to 20,000 Hz).

MIDI. Short for *Musical Instrument Digital Interface.* Pronounced "middy." A digital communications protocol that allows electronic musical instruments and computers to communicate with each other. Because MIDI sends performance information (such as note on, note off, pitch change, instrument change, and volume) rather than actual musical sounds, it's a highly efficient way to store and transmit musical data.

MIDI interface. A serial hardware device that allows a computer to send and receive MIDI data.

MPC. Short for *Multimedia PC.* Any computer, upgrade product, or software title that conforms to the standards set by the Multimedia PC Marketing Council.

multimedia. The combination of graphics, sound, animation, and video in a single software program. Sometimes only two or three of these elements are needed in order for a program to be called a multimedia program. Also, any PC, upgrade product, or software title that conforms to the MPC standard.

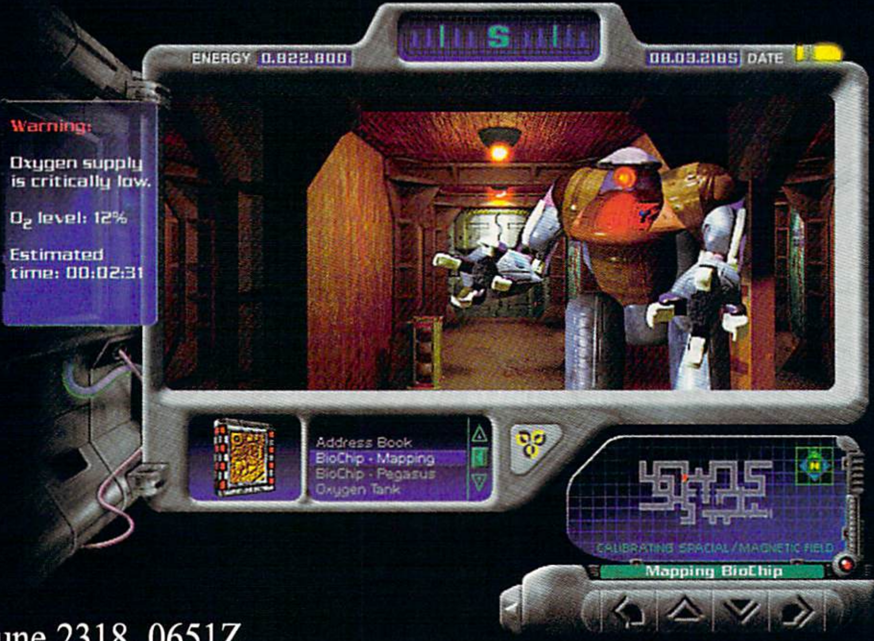
sound card. Also known as a sound board. An expansion board you place inside a PC that improves the quality of the PC's sound output. A program must support the sound board before it can benefit from the board's improved sound quality.

synthesizer. An electronic musical instrument that can generate simple or complex sounds. Most synthesizers include a MIDI interface and a keyboard, though synthesizers without a built-in keyboard are becoming more common.

waveform audio. A technique for re-creating voice and sound effects using digital audio samples. Under Windows, waveform audio is generally stored with the WAV extension.

The World's First Photorealistic Interactive CD Sci-Fi Adventure

THE JOURNEYMAN PROJECT



Warning:

Oxygen supply is critically low.

O_2 level: 12%

Estimated time: 00:02:31

ENERGY 0.822.800
08.03.2185 DATE
Address Book
BioChip - Mapping
BioChip - Pegasus
Oxygen Tank
CALIBRATING SPACIAL/MAGNETIC FIELD
Mapping BioChip

6 June 2318, 0651Z.

Attention Temporal Protectorate:

A rip has been detected in the fabric of time. Only moments remain until all that mankind has accomplished is laid waste. Your objective-journey through time...from prehistoric lands to the distant future, to prevent any compromise in the established continuum. But before the game is over, you must discover who...or what...is the source of this mayhem, and bring it to a halt.

- **Photorealistic 3D modeled worlds to explore**
- **Integrated arcade action and puzzles to challenge any player**
- **Intuitive interface featuring easy-to-use inventory and movement controls**
- **Original soundtrack**
- **Over 30 minutes of full motion video**
- **No set order in which the goals must be accomplished**
- **More than one solution to each problem you encounter**
- ***Also available on Macintosh CD***

Take a ride through time on the CD Adventure that will alter history.

Available at retailers throughout the continuum or by contacting:
Quadra Interactive, Inc., P.O. Box 188033, Carlsbad, CA 92009-9793

Winner!
INVISION 1993 Multimedia Awards
Award of Excellence
plus
•**Gold**-Best Animation/Graphics
•**Bronze** -Best Production Design
•**Bronze** -Adult Games

"...the world of interactive gaming is never going to be the same."
Mark Rhodes, Multimedia Editor,
Micropublishing News

Travel through time

GRAVITON CANNON
ARMED
AUTO PILOT TRACKING
TRACTOR BEAM
TARGET SHIP LOCKED ON

Intense arcade action

Multi-level challenges

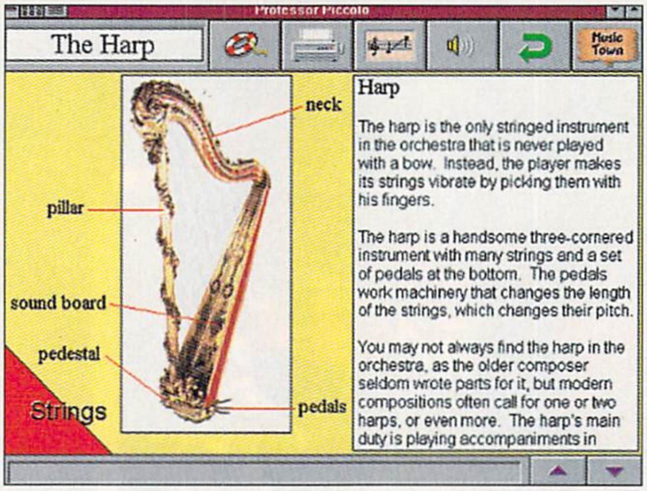
©Copyright 1992, 1993 Presto Studios, Inc.; MPC version by Quadra Interactive, Inc.

PRESTO STUDIOS

QUADRA INTERACTIVE

completely operational, and all my circuits are functioning perfectly" for a Windows startup sound). Sound Source Unlimited (800-877-4778) sells collections of sounds from both the original "Star Trek" and "Next Generation", as well as a collection of sounds from *2001* ($59.95 each). Microsoft (206-882-8080) offers similar collections of movie, cartoon, and musical instrument sounds, called SoundBits ($39.95 each).

The third thing you can do with Windows audio is to manipulate sound files. In fact, with a capable 16-bit sound card and sound-editing program, you'll have the makings of a near-studio-quality digital editing system. I'm not exaggerating, either; we're talking about high-quality stereo recording direct to your hard drive, with cut-and-paste editing and nondestructive digital effects, such as echo, reverb, flange, fade, reverse, volume, and pan. Sound-editing packages such as Wave for Windows 2.0 (Turtle Beach, 717-843-6916, $149) and Sound Forge 2.0 (Sonic Foundry, 608-256-3133, $179) let you alter sounds in ways that recording studios would have killed for just 10 or 15 years ago. Turtle Beach also offers an excellent introductory sound package for Windows, called Turtle Tools ($89). It includes a relatively powerful wave editor, several useful MIDI utilities, and a CD-ROM with over 300 sound effects and musical pieces.



Harp

The harp is the only stringed instrument in the orchestra that is never played with a bow. Instead, the player makes its strings vibrate by picking them with his fingers.

The harp is a handsome three-cornered instrument with many strings and a set of pedals at the bottom. The pedals work machinery that changes the length of the strings, which changes their pitch.

You may not always find the harp in the orchestra, as the older composer seldom wrote parts for it, but modern compositions often call for one or two harps, or even more. The harp's main duty is playing accompaniments in

Opcode Interactive's The Musical World of Professor Piccolo

Sound Off

I've only skimmed the surface of what you can do with Windows and sound. With a sound card becoming a necessary component of any new PC and talk of adding audio circuitry to many new motherboards, expect to see some exciting new audio technologies—such as voice recognition and video conferencing—being integrated into your everyday computing environment. With all this new audio technology, you won't be able to keep Windows quiet any longer. ❑

How to Add Sound to Your Laptop

Laptops run on batteries and can't use sound cards, so you can't have sound on a laptop, right? Not exactly. There are several ways you can add sound to your Windows-based laptop.

Portable PC Sound
AUDIOPORT
PORTABLE PC-SOUND
MEDIA VISION

Buy a parallel-port sound device. These small boxes plug into your parallel port and offer sound that varies from adequate (when using the device's built-in speaker) to excellent (when connected to high-quality speakers). Most work well with Windows programs, with full support for WAV files and limited support for MIDI files (using FM synthesis). DOS support is also limited, varying from no DOS support (Logitech's AudioMan) to support for most DOS programs only when they run under Windows (Media Vision's Audioport) to support for most DOS programs running under DOS (DSP Solutions PORTI•ABLE Sound Plus). These devices run on batteries, so they won't directly drain your laptop's own batteries, though you may encounter some slight drain from the additional use of the parallel port.

Buy a PCMCIA sound card. If you have a laptop with a Type II PCMCIA slot, you can use the MediaShare Tempo (MediaShare, 619-931-7171, $295). It's a PCMCIA sound card that can play WAV and MIDI files in Windows and is compatible with DOS software that supports the Ad Lib and Sound Blaster standards. It even has provisions for a MIDI interface.

Try a PC speaker sound driver. Microsoft has developed a driver that lets your PC speaker play back WAV files. With some PCs, you can barely hear the sounds; with others, you may have interrupt problems in Windows. You can often find it online (on CompuServe, type *go msl* and download SPEAK.EXE), and it's included in Sound Source Unlimited's WAV file collections. Even if you do get it to work, you'll find it doesn't work well with all kinds of sounds. Still, it's worth a try.

Build an insanely over-priced sports car. drive it as fast as possible. And laugh in the face of authority.

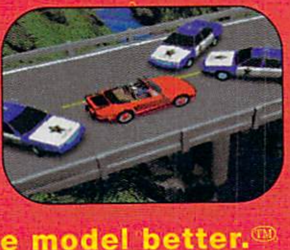
{Just don't cry when you're sharing a cell with a big fat guy who picks his nose.}

EUROPEAN RACERS

The game has tons of cool video clips just like this one. Only different.

Revell CD
POWER
EUROPEAN RACERS

Break all kinds of laws in one of four European Racers. Integrated video clips give tips on equipment and weather conditions while you try to outrun the cops and race on four different tracks. 3-D animated instructions help you build a model of your car so you can remember what it looks like after you wrap it around a guard rail. Available for IBM on CD-ROM and Sega CD.



The model makes the game better. The game makes the model better.™

Circle Reader Service Number 135

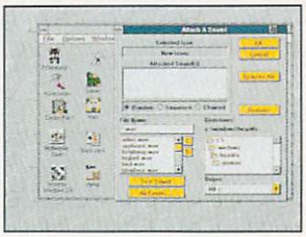
NEW MULTIMEDIA PRODUCTS

Edited by
Lisa Young and
Phillip Morgan

OPEN WINDOWS TO FUN

Daily computer chores can get monotonous, but Moon Valley Software has developed a new multimedia product that will open your Windows to fun by replacing standard screen graphics with animated icons, cursors, and backdrops.

ROMaterial uses sight and sound as a weapon against boredom. Replacing ordinary wallpaper, ROMaterial's backdrops are color images that come to life as moving pictures. Fifty of the most popular icons in Icon Hear-It and Icon Do-It, including the familiar happy face and oversize arrow cursors, are also featured with Moon Valley's new creations.



Moon Valley's ROMaterial

As you sift through the Windows menus and dialog boxes, you can hear any combination of impressions, languages, and sounds. ROMaterial features many of the sounds found on the original Icon Hear-It along with new vocal effects, including the voice of Ross Perot, the calls of animals, and the sounds of musical instruments.

ROMaterial requires Windows 3.1 and a CD-ROM drive.

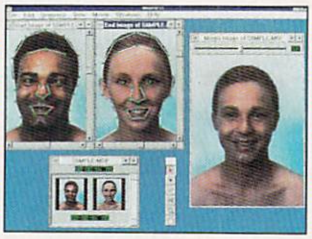
Moon Valley Software
(800) 473-5509
$29.95
Circle Reader Service Number 530

MORPH TRANSFORMS WINDOWS

With Gryphon software's Morph for Windows, you can create the same special effects on your home computer that were used to transform objects in movies such as *Terminator II* and *Jurassic Park* and on recent television commercials.

Morphing is a two-dimensional special effect that smoothly transforms one still image into another. *Time* used this technology when promoting its "Agony in Africa" issue. The magazine's commercial began with the image of a young child, which transformed into a skull and then became an image of the African continent. Crest also used morphing to advertise its baking soda toothpaste in a commercial. It began with a box of baking soda, which changed into a tube of toothpaste.

You can save each morph as a Video for Windows movie, or an FLI or FLC animation, and place it on videotape or film for commercial-quality output.



Morph for Windows

You can also save a single still image or series of images in a variety of common file formats including TIFF, GIF, and Targa.

Gryphon Software
(619) 536-8815
$169
Circle Reader ServiceNumber 531

FlexCam from VideoLab

MULTIMEDIA COMES HOME

Now you can generate complete multimedia productions on your home computer with VideoLabs' FlexCam, the first integrated color camera and microphone system designed for desktop video and communications.

The FlexCam incorporates a high-resolution, color CCD camera and two microphones. It outputs color NTSC video and industry-standard, line-level audio to VCRs, video conferencing systems, and any other product that accepts NTSC or PAL video. Mounted on an 18-inch flexible wand for precise camera positioning, the FlexCam is compatible with all popular video digitizing boards offered for Microsoft Video for Windows.

Because of its unique design, you can position the FlexCam directly in front of the screen for true eye-to-eye contact. With other systems, the camera is located to the side or on top of the computer, and you can only see the profile of the user. The flexible neck is also ideal for document capture and other desktop video uses.

VideoLabs
(612) 897-1995
$595 (in the U.S.)
$695 (elsewhere)
Circle Reader Service Number 532

LAPTOP VIDEO

The Presenter Video Capture, introduced by Consumer Technology Northwest, combines video transfer technology with the convenience of laptop and notebook computers. The portable unit lets you convert still images from a video-recording device into a computer-generated document.

Compatible with all DOS and Windows applications, the Presenter Video Capture can scan full-color video images with as many as 32,768 colors. You can use it with video recorders, digital cameras, camcorders, and any NTSC input device.

Weighing only 5.35 ounces, the Presenter Video Capture can be conveniently carried with your laptop or notebook computer, though it can also be used with any desktop. The unit simply plugs into a parallel port. All the required hardware and software are included in the package.

Consumer Technology
Northwest
(800) 356-3983
$319
Circle Reader Service Number 533

MULTIMEDIA BY SUBSCRIPTION

Newsweek InterActive, a multimedia CD-ROM magazine created by the editors of Newsweek, is now available quarterly by subscription or by single issues at leading retail stores.

Each quarterly edition will include as many as three original articles on current

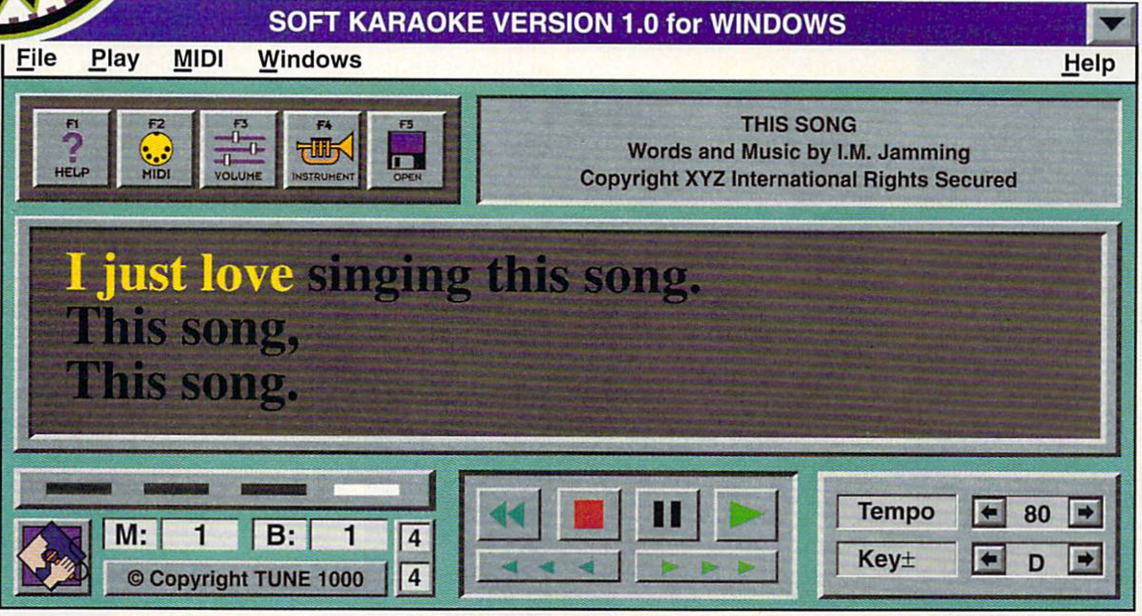
SOFT KARAOKE™

$49.95 suggested retail

For Windows...

Out of the Shower, into your PC

Step right up! Get on the mike! Turn your PC's sound board into a full-fledged home karaoke! Take advantage of this jam-packed introductory offer and get yourself the most complete karaoke ever to be produced!


SOFT KARAOKE VERSION 1.0 for WINDOWS

THIS SONG
Words and Music by I.M. Jamming
Copyright XYZ International Rights Secured

I just love singing this song.
This song,
This song.

The best karaoke experience

Lyrics appear verse by verse and light up to the right beat. Simple commands allow you to enjoy karaoke fun like never before. You can select your favorite song, change any or all the musical instruments, and adjust the volume of individual tracks. Do you have a hard time hitting those high notes? No problem... just lower the pitch to match your range! Is the song too fast for you to keep up? Slow it down! **SOFT KARAOKE** brand software is the first and only karaoke that allows you to set the pitch and speed of the music to your liking! Great for parties as you entertain your friends (or let them entertain you) by singing all the greatest hits. You might even ask your boss to sing along at a "Happy Hour" office party (at the end of the evening)! With the mike in your hands and the words on the screen, you'll be all set for the newest entertainment experience on PC!

All kinds of songs, all kinds of stars

SOFT KARAOKE brand software plays **SOFT KARAOKE LPs** which include songs made famous by star like Elton John and Madonna. All songs come in **MIDI KARAOKE** file format and respect their original orchestrations. Whatever your tastes, there's a **SOFT KARAOKE LP** for you!

Just what your sound board was designed for

Finally, a multimedia product that uses your Soundblaster, Adlib, or other popular sound board to its full extent whether it is the Wavetable lookup or FM synthesis type.

Compatible with your own sound software

Use your Windows sound software to mix in your voice, mute out the melody, and even record your own performances!

SOFT KARAOKE
HITS OF ALL TIME
volume 1

LIMITED INCLUDED QUANTITIES

As if the **SOFT KARAOKE** brand software wasn't enough on its own, you'll also receive a fabulous **SOFT KARAOKE LP** absolutely free! Take advantage of this unbelievable offer while you can. All **SOFT KARAOKE LP** songs come in **MIDI KARAOKE** file format.

Act quickly and get a sleek microphone with your **SOFT KARAOKE** brand software! Designed to plug into your sound board, it will come in handy for your singing and other multimedia needs. Hurry! Offer is available while supplies last!

24 HOURS 7 DAYS

Call toll-free 1-800-363-TUNE Or see your nearest dealer

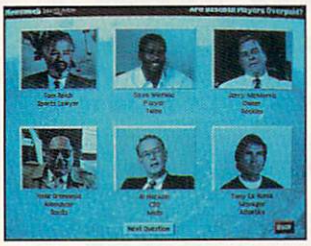
1-800-363-8863

SOFT KARAOKE, MIDI KARAOKE and TUNE 1000 are trademarks of **THE UNIVERSAL NETWORK OF ENTERTAINMENT.**
Other names are trademarks of their respective owners.
TUNE 1000 Corp., Suite 1000A, 295 Forest Avenue, Portland, ME 04101-2000 Tel: (418) 877-8900, Fax: (418) 877-9994

Circle Reader Service Number 202

TUNE 1000 THE UNIVERSAL NETWORK OF ENTERTAINMENT™

NEW MULTIMEDIA PRODUCTS



Newsweek Interactive

news topics. The format combines text, audio, video, animations, narration, and photo essays into easy-to-use multimedia presentations, including interactive simulations that let you get personally involved in the news. Three months of *Newsweek* print editions and hundreds of articles from the *Washington Post* are included and can be searched by keyword. Also in each issue are broadcast interviews from "Newsweek on Air," a coproduction of *Newsweek* and The Associated Press Radio Network.

Newsweek InterActive is published for IBM-compatible computers with CD-ROM drives, as well as the Sony Multimedia CD-ROM Player. Additional formats will be available in the future.

Newsweek
(800) 634-6850
$129.95 (per year)
$49.95 (per issue)

Circle Reader Service Number 534

CHECK IT OUT

Your next visit to the local library could bring a few surprises. On the shelves next to the books, you may find an assortment of CD-ROM titles that you can check out and enjoy in your own home.

Compton's NewMedia, a publisher and distributor of CD-ROM titles, is offering libraries a specially marked series of reference, music, travel, business, and children's titles. Packages are available in assortments of 10, 20, and 40 titles and include display holders that make it easy for libraries to promote their new CD-ROM collections.

The library lending program is based on a similar program for video rental stores launched by Compton's NewMedia earlier this year. Following multiple reorders from the video stores, Compton's NewMedia has increased both the number of titles and the number of participating stores.

Under current law, software rental is illegal without approval from the software publisher. In this case, Compton's NewMedia has obtained the rights and will provide special discs and packaging earmarked for lending only to the participating libraries and video rental stores.

Compton's NewMedia
(800) 344-2621
$1,700 to $3,800

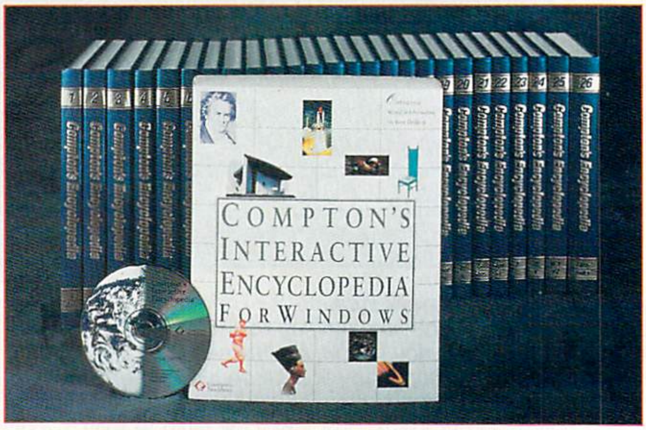
Circle Reader Service Number 535

MULTIMEDIA GOES MULTIMARKET

It may be some time before pixels supplant the printed word and bookstores become disc stores, but CD encyclopedias have already made their way onto booksellers' shelves. Compton's Learning Company and Compton's NewMedia have put together The Compton's Combo, a true multimedia package to market through bookstores and software stores alike. It includes both the printed and CD-ROM versions of the 9-million-word Compton's Encyclopedia.

The package you buy in the store includes the first volume of the printed encyclopedia, as well as Compton's Interactive Encyclopedia for Windows on CD-ROM. The CD-ROM version includes the complete text of the printed version; sound, animation, and full-motion video; and SmarTrieve, for natural-language text search. A mail-in coupon is included for the other 25 printed volumes, which will be shipped to you at no additional charge.

Compton's NewMedia hopes the Combo will encourage booksellers to add additional CD-ROM titles to their shelves as CD-ROM drives become more common.



The Compton's Combo from Compton's NewMedia

Compton's NewMedia
(619) 929-2500
$498

Circle Reader Service Number 536

CAN YOU SAY "SUI"?

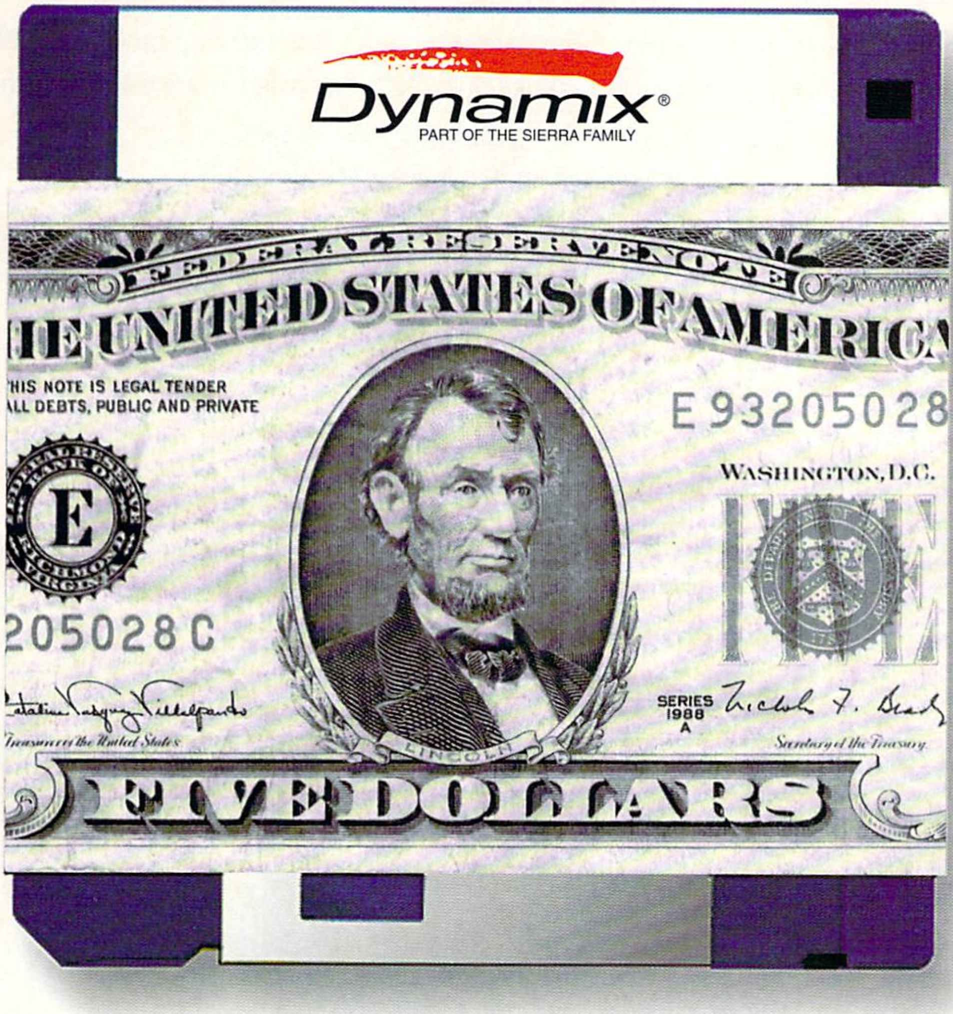
Talking to your computer might not be as futuristic as you think. IBM has announced a developer's toolkit that will allow software makers to produce Speech User Interfaces (SUI) for their Windows applications.

The IBM Continuous Speech Series (ICSS) for Windows is scheduled for release by the end of 1993. OS/2 and AIX versions are already available.

The system has an active vocabulary of 1000 words taken from a base vocabulary of 20,000. Developers can extend the vocabulary to include industry-specific terminology. Unlike many speech systems, ICSS doesn't require a pause between words or special training for users. According to IBM, number recognition will be highly accurate, so entering long lists of numbers into a spreadsheet won't be as tedious as it is with a keyboard. Typos and transpositions could be virtually eliminated.

Lotus displayed a demo program of 1-2-3 using ICSS for OS/2 in IBM's booth at the recent PC Expo in New York. WordPerfect showed its demo based on IBM's Speech Server Series (ISSS), a related technology. Neither company has committed to IBM, but it's apparently a strong contender. Future applications from these and other companies will likely use voice recognition for both navigation and dictation.

IBM
(800) IBM-CALL


Dynamix®
PART OF THE SIERRA FAMILY
FEDERAL RESERVE NOTE
THE UNITED STATES OF AMERICA
THIS NOTE IS LEGAL TENDER
ALL DEBTS, PUBLIC AND PRIVATE
E93205028
WASHINGTON, D.C.
205028C
SERIES 1988 A
Treasurer of the United States
Secretary of the Treasury
LINCOLN
FIVE DOLLARS

...IS GETTING THEM GIFT-WRAPPED!

TO GET THIS

FREE SPECIAL EDITION VERSION OF THE EVEN MORE INCREDIBLE MACHINE, FEATURING 10 UNIQUE PUZZLES YOU CAN'T BUY IN ANY STORE....

PLUS A SNEAK PREVIEW OF THIS CHRISTMAS' HOT ITEM - SID AND AL'S INCREDIBLE TOONS...

PLUS A CERTIFICATE GOOD FOR A $5.00 REBATE ON ANY OF THE DYNAMIX GAMES IN THIS AD:

FRONT PAGE SPORTS FOOTBALL PRO
THE EVEN MORE INCREDIBLE MACHINE
ACES OVER EUROPE
BETRAYAL AT KRONDOR
OR
YOU CAN EVEN GET A REBATE ON
SID & AL'S INCREDIBLE TOONS!

DO THIS:

READ THE ADS.

FIND THE PHRASES BELOW AND FILL IN THE BLANKS. TAKE THE CIRCLED LETTERS AND UNSCRAMBLE THEM TO FORM ONE VERY SPECIAL WORD.

ACES OVER EUROPE: IN THIS GAME YOU'LL FLY AIR-TO-GROUND ○ ○ _ _ _ _ _ _ .

BETRAYAL AT KRONDOR: REVIEWERS HAVE CALLED IT A VIRTUAL _ ○ _ _ _ _ ○.

THE EVEN MORE INCREDIBLE MACHINE: CREATE YOUR OWN PUZZLES AND ○ _ _ _ _ YOUR FRIENDS CRAZY.

FRONT PAGE SPORTS FOOTBALL PRO: COMMIT TO _ ○ _ _ _ _ _ _ ○ _ _ .

NOW REARRANGE THE LETTERS TO FORM THIS IMPORTANT WORD _ _ _ _ _ _ _.

ANSWER THESE QUESTIONS:

DO YOU CURRENTLY OWN ANY DYNAMIX GAMES? _______.

WHICH ONES?_______________________________________.

DO YOU INTEND TO PURCHASE ANY DYNAMIX GAMES IN THE NEXT 90 DAYS?_______.

WHICH ONES?_______________________________________.

WHAT IS YOUR FAVORITE GAME (FROM ANY COMPANY)_______________________.

NAME_______________________________________

ADDRESS_______________________________________

CITY _______________ STATE ___________ ZIP ___________

THEN SEND THIS PAGE TO US - AND WE'LL SEND YOU THE GOODS!!

SID, AL, AND EVEN MORE PREVIEWS
SIERRA ON-LINE, INC., P.O. BOX 485
COARSEGOLD, CA 93614

OFFER GOOD THROUGH FEBRUARY 28, 1994. THIS OFFER IS NOT VALID WITH ANY OTHER COUPONS OR PROMOTIONS. LIMITED TO ONE DEMONSTRATION DISK PER HOUSEHOLD. THE EVEN MORE INCREDIBLE MACHINE DEMO IS AVAILABLE FOR BOTH THE MAC AND IBM/COMPATIBLES. SID & AL'S INCREDIBLE TOONS PREVIEW IS AVAILABLE ONLY FOR IBM/COMPATIBLES. PLEASE SPECIFY YOUR PREFERENCE.

COMMIT TO ★ EXCELLENCE

FRONT PAGE SPORTS™

BANKS, LONG, WHITE HARRIS AND TAYLOR ARE ABOUT TO CRUSH BLEDSOE LIKE AN ACCORDIAN.

(HIT ESCAPE AND SELECT A BETTER PLAY.)

Or quit and start a new game. Because this is your turf. Your rules. Your game.

Front Page Sports: Football Pro. The real thing. For the die-hard fan who lives for Sunday afternoons and can't stand the thought of the off-season.

You don't just control the game. You control the whole NFL league. With real NFL rosters and stats. This is your chance to coach your way out of a paper bag.

So pick your team, call the plays, and watch your players spin, flip, dive, and crunch. It's so real, you can feel the pain.

You control every last detail because you're the coach. So go ahead. Design depth charts and sub in and out whenever you want. Your number one running back is tired? Give him a rest. Your quarterback isn't cutting it? Trade 'em. Hate Dallas? Make 'em wear pink.

Front Page Sports: Football Pro.

It's football the way it was meant to be...with you in control.

NATIONAL FOOTBALL LEAGUE PLAYERS ASSOCIATION

FOOTBALLPRO

Available at retail for IBM/compatibles.
Or call 1-800-757-7707.

Dynamix®
PART OF THE SIERRA FAMILY

Officially licensed product of the NFL Players Association

TM OR ® ARE TRADEMARKS OF, OR LICENSED TO DYNAMIX, INC.

© ® 1993 DYNAMIX INC.

Dynamix®
PART OF THE SIERRA FAMILY
even more
THE INCREDIBLE MACHINE
Special Edition
10 All New Games!
SNEAK PREVIEW
SID & AL'S INCREDIBLE TOONS

THE ONLY THING BETTER

THAN GETTING FREE

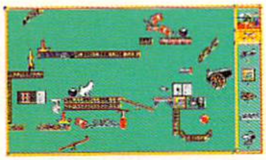
GAMES...

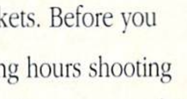
KEVIN DESIGNED A GAME WITH 56 TOOLS, 160 PUZZLES, AND THOUSANDS OF POSSIBLE SOLUTIONS.

KEVIN'S GOT WAY TOO MUCH TIME ON HIS HANDS.

The Even More Incredible Machine. Even more incredible than the original. We're talkin' *Computer Game Review's* "Puzzle Game of the Year." It's our latest puzzle contraption game for the obsessive-compulsive lurking within you.

It starts off innocently enough. Creating elaborate contraptions by rigging conveyer belts, bellows, and teeter-totters to shoot some hoops, pop some balloons, or fill some buckets. Before you know it, you're spending hours shooting goldfish, pushing cats off cliffs, and feeding little men to alligators. Yes, alligators.





And as if that's not enough, there's over 70 new puzzles, 11 new tools, and a free form mode so you can create your own puzzles and drive your friends crazy. Just like Kevin did to you.

Kevin's crossed that fine line between genius and insanity. Why not join him?

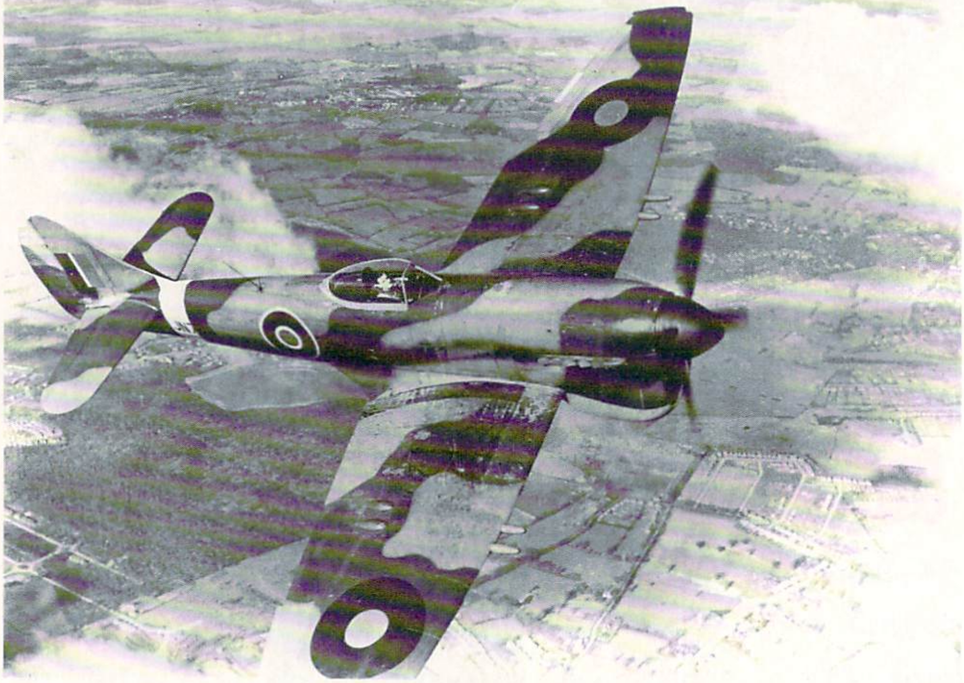
even more
THE INCREDIBLE MACHINE

Available at retail for
IBM / compatibles, Windows, Macintosh.
$19.95 updates for registered owners.
Call 1-800-757-7707

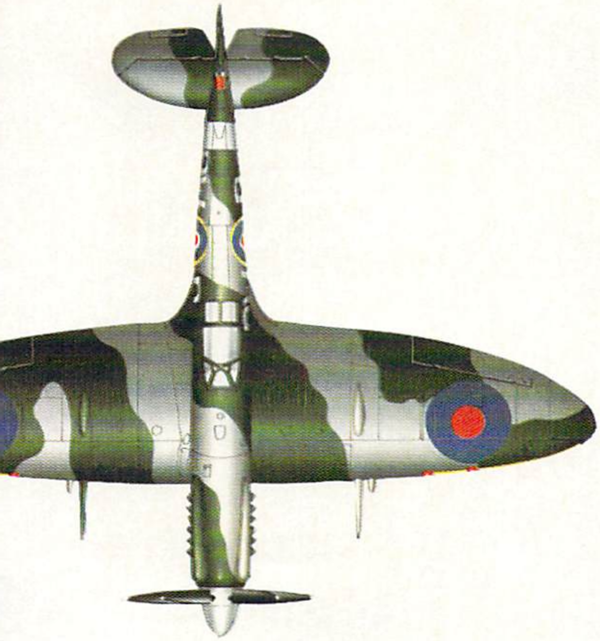
Dynamix®
PART OF THE SIERRA FAMILY

™ OR ® ARE TRADEMARKS OF, OR LICENSED TO DYNAMIX, INC. ©1993 DYNAMIX, INC. WINDOWS IS A TRADEMARK OF MICROSOFT CORPORATION

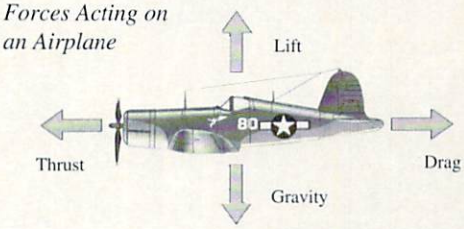
YOUR BELLY TANK IS ON FIRE.
YOUR RADIO IS GONE.
YOUR AIR FIELD IS 135 MILES AWAY.
GODSPEED.

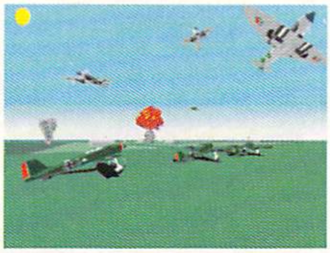


GREAT
WAR
PLANES

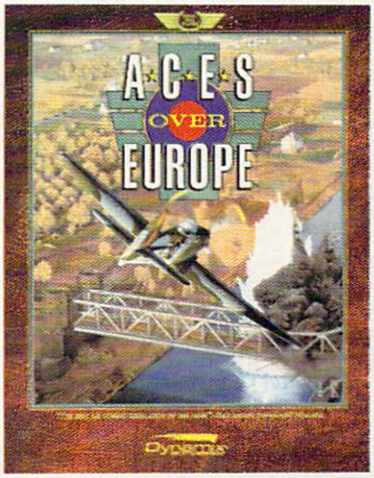


SOAR THROUGH FLAK-FILLED SKIES IN THE COCKPIT OF YOUR SUPERMARINE SPITFIRE. OR ONE OF 15 OTHER AIRCRAFT FROM THE INFAMOUS SECOND WORLD WAR.


Forces Acting on an Airplane
Lift
Thrust
Drag
Gravity
80



SHIPS BURN IN THE WATER. OIL DRUMS BLOW ON THE HORIZON. YOU'RE FLYING FOR THE BRITISH RAF ONE DAY. THE GERMAN LUFTWAFFE, THE NEXT.


ACES OVER EUROPE
Dynamix

AVAILABLE AT RETAIL FOR IBM / COMPATIBLES.
OR CALL 1-800-757-7707.

FLY ALL NEW AIR-TO-GROUND MISSIONS, TAKE OUT ENEMY BRIDGES, AND STRAFE ARMORED VEHICLES. FACE OFF AGAINST FAMOUS WWII ACES SUCH AS ADOLF GALLAND AND HUB ZEMKE.

ACES OVER EUROPE

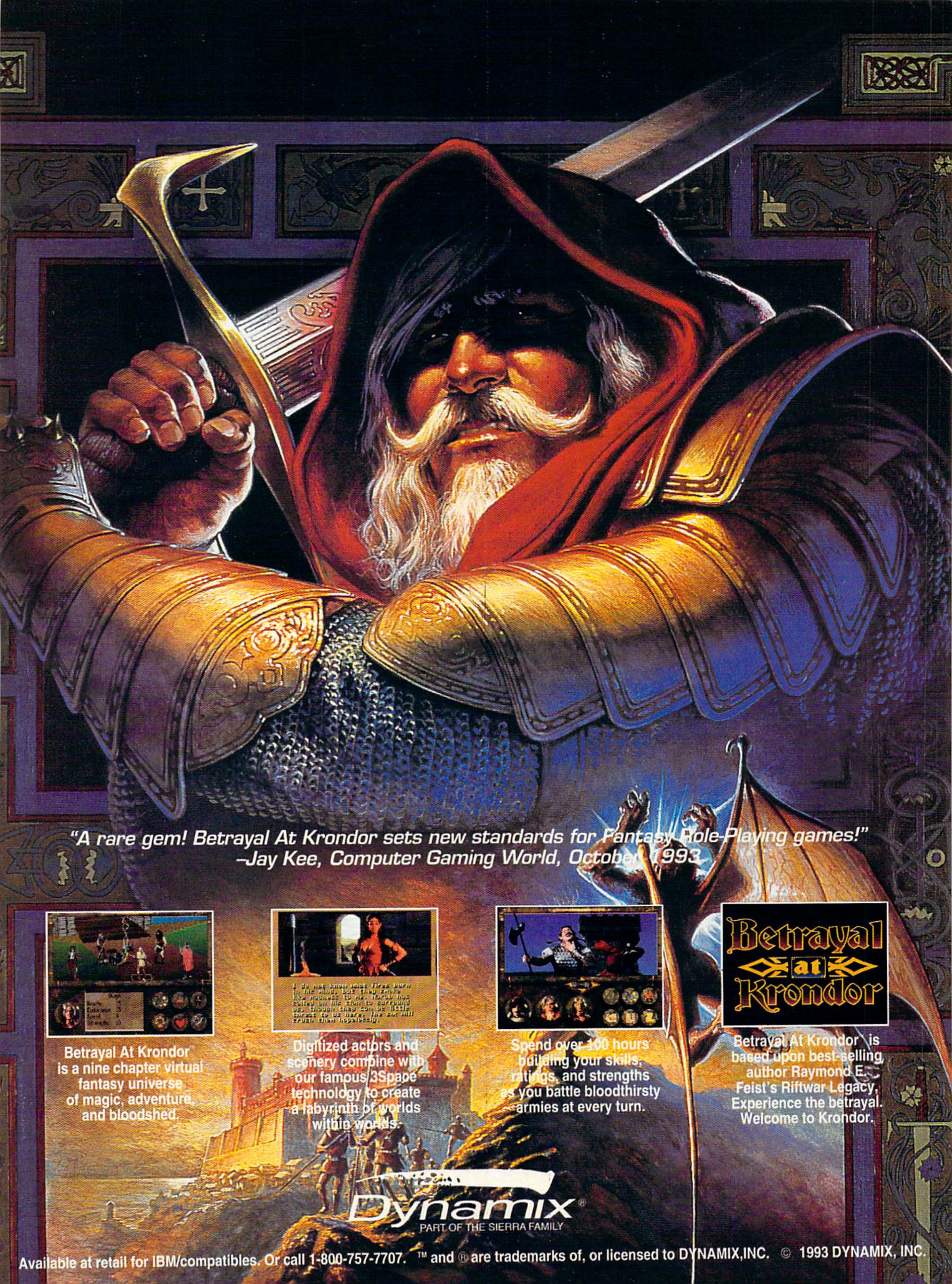
THE LATEST IN THE GREAT WAR PLANES SERIES.

Dynamix®
PART OF THE SIERRA FAMILY

™ AND ® ARE TRADEMARKS OF, OR LICENSCED TO, DYNAMIX, INC. © 1993 DYNAMIX, INC.

224 MILLION SQUARE FEET OF FORESTS, SWAMPS, MOUNTAINS, BLACK MAGIC, AND BLOODBATHS.

WELCOME TO KRONDOR.



"A rare gem! Betrayal At Krondor sets new standards for Fantasy Role-Playing games!"
–Jay Kee, Computer Gaming World, October 1993

Betrayal At Krondor™ is a nine chapter virtual fantasy universe of magic, adventure, and bloodshed.

Digitized actors and scenery combine with our famous 3Space technology to create a labyrinth of worlds within worlds.

Spend over 100 hours building your skills, ratings, and strengths as you battle bloodthirsty armies at every turn.

Betrayal At Krondor™ is based upon best-selling author Raymond E. Feist's Riftwar Legacy. Experience the betrayal. Welcome to Krondor.

Available at retail for IBM/compatibles. Or call 1-800-757-7707. ™ and ® are trademarks of, or licensed to DYNAMIX,INC. © 1993 DYNAMIX, INC.

COMMIT TO ★ EXCELLENCE

FRONT PAGE SPORTS™

IT'S MINUS 25 DEGREES, WINDS ARE HOWLING AT 45 MPH AND THERE'S TWELVE FEET OF SNOW ON THE GROUND.

FOOTBALL ANYONE?

That's right. Football. Yeah, in this weather. What are you a wimp? This is how football was meant to be played.

Front Page Sports: Football Pro is the real thing. For the die-hard fan who lives for Sunday afternoons and can't stand the thought of the off-season.

You're not just coach for a day. You run the whole league for the whole season with real NFL rosters and stats.

You're in charge.

You're the coach so you control everything, from designing your own plays to signing free agents and making trades. There's even a college draft! Sub in and out whenever you want. Design uniform colors.

This is your chance to prove you can coach your way out of a paper bag. So pick your team, call the plays, and watch your players spin, flip, dive and risk career-ending injuries.

Front Page Sports: Football Pro. So real, you'll wish you were wearing a helmet.

FOOTBALLPRO

Available at retail for IBM/compatibles.
Or call 1-800-757-7707.

Dynamix®
PART OF THE SIERRA FAMILY

Officially licensed product of the NFL Players Associaton

TM OR ® ARE TRADEMARKS OF, OR LICENSED TO DYNAMIX, INC.

© ® 1993 DYNAMIX INC.

$299 (single user, standard microphone)
$699 (single user, high-quality microphone)
Circle Reader Service Number 537

WALK SOFT RUNS HARD NEWS ONLINE

Hold the presses—in fact, forget the presses. Walk Soft has taken the paper out of newspaper and replaced it with your computer monitor, complete with sound and animation. News in Motion is the first online multimedia newspaper in the U.S. It's currently available as a weekly, but it will soon be issued as a daily (Monday through Friday).

You can download the "paper" every Saturday or have it sent to you on disk. You'll need Windows 3.1 and DOS 5.0 or higher. Its news and editorials come from agencies around the world: Reuters, *The Economist, Le Monde, Asahi Shimbun, Der Spiegel*, and others. Color photos, graphics, and political cartoons accompany the text, and sound and animation bring the news to life.

News in Motion also includes the soft news and fluff that so many readers find endearing in their favorite news magazines and papers. It has animated horoscopes and comics, the Frugal Gourmet, and defense coverage from Jane's Defense Weekly.

Subscriptions are available for 1, 3, 6, and 12 months. Rates are higher than for weekly news magazines or daily papers—$4.80 per issue for a 12-month subscription—but downloading is toll-free if you use a 9600-bps or faster modem.

Walk Soft
(716) 271-8250
$250 (12 months)
Circle Reader Service Number 538

IT'S NOT THE CARD YOU HEAR

As any audiophile will tell you, the best stereo in the world sounds only as good as its speakers. Since the same principle applies to computer sound systems, your choice of speakers is as important as your choice of a sound card.

The ACS50 amplified speaker system from Altec Lansing offers you many of the features of high-fidelity home-audio speakers and amplifiers. The two-way speakers have 2 1/2- x 1 1/4-inch midbass drivers and 3/4-inch ferrofluid-cooled dome tweeters. They're magnetically shielded so you can place them beside your monitor without interference, and they're matched with the amplifier for optimum frequency response.

The amplifier mounts onto your monitor, so the headphone jack and volume control are on the front of your computer rather than on the sound card. Circuitry for bass and treble boost are built into the amplifier.

Altec Lansing's ACS50 speaker system

Altec Lansing
(800) 258-3288
$100
Circle Reader Service Number 539

Vdeck 500 from Sony Computer Peripheral Products

VDECK, VISCA, AND OTHER VIDEO VERNACULAR

Sony has added a second 8-mm VCR to its Vdeck series. Like the first Vdeck (the CVD-1000 Hi8), the new Vdeck 500 was designed to be a computer peripheral rather than simply a VCR you can connect to your computer. Sony's Video System Control Architecture (VISCA) is built into the deck, so you can connect it directly to your computer and control it with your video-editing software using VISCA drivers.

The Vdeck has a number of professional features for precise editing, including time coding for highly accurate searching and dubbing, input and output jacks for communicating with other devices in a VISCA daisy-chain, and voice boost for voice enhancement and background noise reduction.

You can also expect to see more video software for Windows. Microsoft has incorporated VISCA protocol into its new Media Control Interface (MCI) drivers. Software developers can use these drivers to create video-editing software that can control your camcorder, VCR, and other video devices. The platform-independent VISCA protocol has already been used in drivers for Macintosh and other systems, but the system-level support offered by Microsoft's new MCI drivers should prompt many new PC applications. Desktop video may soon be as common as desktop publishing.

Developers can download the new drivers from Sony's Bulletin Board Service at (408) 955-5107.

Sony Computer Peripheral Products
(800) 352-7669
$1,099
Circle Reader Service Number 540

PC KARAOKE AND SOFT KARAOKE

These days, nightclubs are famous for their karaoke machines, which encourage fun-loving (and often alcohol-sodden) folks to get up in front of a crowd and bark out a hit song, all to the recorded accompaniment of a full ensemble and background singers. Now, two new software products, PC Karaoke (Sirius Publishing, 602-951-3288, $99.95) and Soft Karaoke (Tune 1000, 800-363-8863, $49.95), let you do your crooning at home. And while both products do a great job of replacing the standard karaoke machine, they're as different as Frank Sinatra and Nirvana.

PC Karaoke is, from an options point of view, the simpler of the two products. A CD-ROM–based Windows program that features 256-color graphics, studio-recorded music, and action video sequences, PC Karaoke synchronizes onscreen lyrics with the beautifully arranged and professionally recorded songs.

When you run the program, you see a full-screen graphical menu depicting the songs on the current disc. To choose a song, simply click on its picture. The song's graphic then fills the screen, after which the song loads and begins to play, highlighting the lyrics on the screen as it goes.

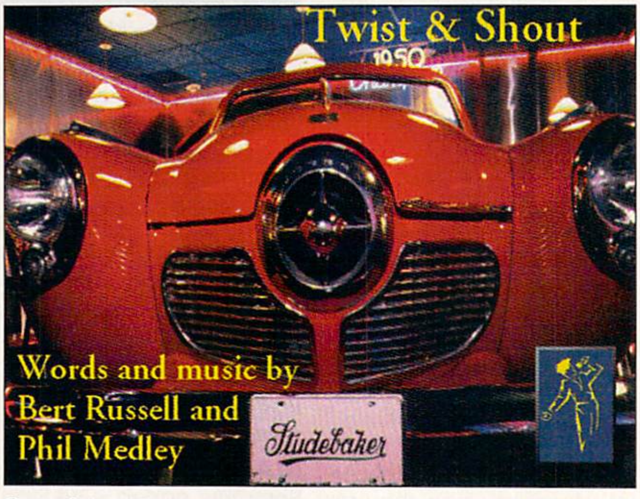
If you want to sing along with all 12 of the musical selections on the disc, you can click on KJ's Top 12 Countdown. This brings up a karaoke jockey (the karaoke version of a disk jockey), who gets you started on your musical tour and pops in now and then with some humorous silliness.

Extra song discs are available from Sirius for $15.95 each. The current catalog features 40 discs that cover all kinds of music, from Broadway show tunes and movie soundtracks to hard rock and rap. The disc that comes with PC Karaoke features a wide range of selections, including "You've Lost That Lovin' Feelin'," "Twist and Shout," "Everything I Do," and "Friends in Low Places"—12 songs in all. The package includes a certificate for two additional discs.

While PC Karaoke's CD-ROM format offers greater sound quality, Soft Karaoke's MIDI format (no CD-ROM drive required) offers greater flexibility. When you run Soft Karaoke, a tape player–like control panel appears. Using the control panel, you can not only load and run song files, but also manipulate the files in various ways.

For example, you can change both the tempo and key (changing the key is especially valuable for people with a limited vocal range). In addition, the volume control panel lets you set each individual instrument's volume, and the instrument control panel lets you assign any one of dozens of different instruments to any instrument track in the song. Of course, with the main control panel's controls, you can play, pause, fast-forward, and reverse the current song, much as you can with a tape deck.

To get this manipulative power, however, you have to give up a certain amount of sound quality. This is because MIDI files aren't actual sound recordings but files that control MIDI instruments. To put it simply, all the sounds you hear with Soft Karaoke are generated on a synthesizer, either your sound board or some other external MIDI instrument. The actual quality of the sound depends on the quality of your synthesizer. (It's worth pointing out that much of today's natural-sounding music is actually created with MIDI synthesizers.)



One of the 12 songs that are included in PC Karaoke

Soft Karaoke comes with five song files, including such favorites as "Dust in the Wind," "Stand By Your Man," and "The Way We Were." Additional disks containing ten songs each sell for $19.95 per disk. In its current catalog, Tune 1000 offers 28 disks; these include the usual assortments as well as collections by specific artists such as Fleetwood Mac, Michael Jackson, Frank Sinatra, and Elton John.

Which product is better? That depends on what's most important to you. PC Karaoke is a sound and graphical delight (with a price tag that reflects this), but it allows no manipulation of instruments. If you like to fiddle with your music, and are willing to forfeit some sound quality and the fancy graphics, Soft Karaoke's powerful control panel will keep you busy for hours.

The bottom line is that both are excellent products, differentiated enough from each other that they will appeal to different segments of this niche market. Both products install easily and work right out of the box—as long as you have your Windows multimedia drivers and mixers set up properly. Both include a starter set of songs (although Soft Karaoke includes only 5, compared with PC Karaoke's 12), and both include microphones (although PC Karaoke's microphone is of a higher quality).

Whichever program you pick, you'll be able to enjoy the karaoke experience in your own home—which will go a long way toward making your next party the hit of the block. But do your friends a big favor: Practice in private first. ❑

The Labyrinth of Time

(on c.d.)

MARCH
FEBRUARY
JANUARY
DECEMBER
LABYRINTH
CD
ROM

The Labyrinth of Time. An epic fantasy of time travel and adventure, possible only on CD-ROM. The legendary King Minos has commissioned a labyrinth bridging time and space. You must overcome the power of Minos and destroy the labyrinth by manipulating the very fabric of history. But beware, the future may not unfold in quite the way you planned.

ELECTRONIC ARTS HINTS HOTLINE
1-900-288-HINT
HINT-1-900-288-4468-HINT

Available for PC CD. Coming soon for Macintosh® CD. Macintosh is a registered trademark of Apple Computer.

ELECTRONIC ARTS®

95¢ for the first minute, 75¢ for each additional minute. If under 18, get parents permission before calling. Requires a touch-tone telephone. Messages subject to change without notice.

Circle Reader Service Number 112

This innovative box of tools manages to be both accessible to the beginner and deep enough for the power user.

Tom Campbell

PC TOOLS FOR WINDOWS

CENTRAL POINT
PC TOOLS
FOR WINDOWS
SIMPLIFY AND PROTECT YOUR WORK IN WINDOWS
NEW
Desktop
File Management
Data Protection
System Enhancement

Central Point's PC Tools for Windows is bigger and sleeker (and more expensive) than its DOS version. If you're ready for its fresh new feature mix, you'll find it's the Lexus of utility packages: big yet swift, elegant yet fully functional, more expensive than last year's model yet still a great value.

This Windows version of PC Tools is a distant relation of its smash-hit DOS counterpart. It contains a replacement for the Windows desktop, a File Manager replacement, a backup program, data recovery for thrashed disks or files, an antivirus utility, a system analyzer, a disk optimizer, and a BASIC-like scripting language.

There are a few extras thrown in too, such as a scheduling program originally designed to run the backup program but now of general-purpose use, customization that lets you make extensive changes to the user interface in all of the applications, and some wildly creative but undocumented screen savers.

Users of the DOS version will note that the telecommunications, database, notepad, and outliner modules are missing and presumed dead: Central Point found that either Windows had these features already or too few users took advantage of them. I miss the multiwindow notepad and the database manager.

It's within Multidesk, the program's replacement for the Windows desktop, that some of the best features are found. Multidesk knits everything together and makes good on its promise of offering an improvement over Windows' own desktop. Not only is it arguably easier to learn and use, but it's also demonstrably superior. The best features are QuickLauncher and multiple desktops. QuickLauncher lets you add program or folder names to the System menu and launch them from there, sort of like desk accessories on the Macintosh. As with the Mac, Windows is a multitasking operating system that presumably makes this approach redundant. Yet, as anyone who's ever used desk accessories on the Mac will tell you, doing things this way is so much easier than switching to the desktop to run a program that it makes perfect sense once you've given it a test drive.

Perhaps Multidesk's most innovative feature is its multiple desktops, which I find much harder to explain than to use. Instead of being limited to one desktop, you can have as many as you want. You select among these desktops by way of a floating palette (or a menu, if you don't want the palette around). The palette shows miniature yet fully functional versions of each of your custom desktops. It's sort of like groups in Program Manager, but it's abstracted to the desktop itself.

At first I thought this would be a "Who needs it?" feature, but I found myself relying on it more and more. I had already patched together a clunky approach using groups with Program Manager. When I realized this, I converted to Multidesk and didn't look back. Plus, I was able to employ some other working habits I'd planned to acquire with Windows 3.0. Multidesk's folders, which act like supergroups, can be nested, allowing me to make use of the hierarchical organization I had expected Windows to give me.

All of this presupposes a pretty complex hard disk layout, perhaps one on a network; for someone who runs only one or two applications, Multidesk is probably overkill. As someone who lives in Windows all day, I found the transition to PC Tools smooth and natural, but I wondered if it was for everyone.

Eventually I realized that almost everyone using Windows 3.1 applications probably has a pretty big hard disk because the new apps all seem to take 10, 20, or 50 megabytes, strewing complex directory structures and hundreds of files in their wake. So SmartFind was a welcome relief. It lets you search for a file on the hard disk or for text within a file. SmartFind does the expected but extends it dramatically, allowing you to use dates, file attributes, and wildcards in one unbelievably swift package.

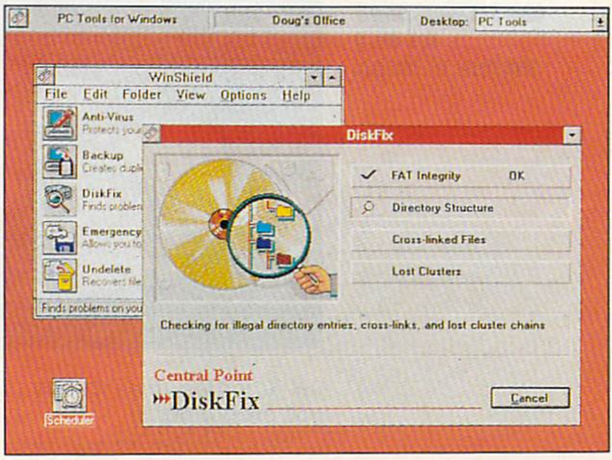
SmartFind, and indeed all of PC Tools, worked just great on a network. And while our network is notably lax (everyone uses the same password), there are dozens of customizing and security options for those in more demanding situations. I've never encountered an easier product from the network administrator's point of view that was equally simple on a one-user system.

ScriptTools, the package's macro language, is the best such Windows script language I've seen. If using batch files is your idea of automating tasks, you'll be in for the thrill of your life when you play with ScriptTools. It's a BASIC-like language with jillions of Windows-y features. With it, you can create dialog boxes, access the Clipboard, time events, maintain control over the keyboard, gain access to DLLs, execute network-related commands, and more. If you're not a programmer, you'll use ScriptTools to record scripts, as you do with Windows' own Recorder. But ScriptTools comments on your scripts, offering a matchless opportunity to teach the patient nonprogrammer how to program. I've seen a lot of Windows batch languages, and this one is tops.

PC Tools has a whole range of file-recovery programs. The installation process gives file recovery top priority. If you've bought the product because of a hard disk crash, because your hard disk's FAT has been fried, or because you want to recover a damaged dBASE file, the installation program won't copy the PC Tools files onto your hard disk until you've taken care of the problem. It promotes preventive medicine, leading you through the creation of a disaster-recovery disk and even offering a self-stick label for the disk.

In a package this big, you're sometimes lucky enough to get a fortune cookie—one of those seemingly quirky little surprises that threatens to turn into a full-time hobby. In the case of Windows 3.0, it was Solitaire. In 3.1, it was Minesweeper. In PC Tools, the screen savers seem to fall into this category. Not even mentioned on the box, in the manuals, or in the README file, they're apparent only to the sharp-eyed during installation. Nothing is said other than that you can leave them out of the installation. To see them, you need to open the Windows Control Panel, choose Desktop, and go to Screen Saver. I'll leave the rest a surprise, except to tell you that Food Fight is my favorite, even though it needs an 80486 to really do its thing.

I had a few problems with the package, all small. The manual is hideously underindexed (the box trumpets PKZip file compression and decompression, for example, but neither ZIP or PKZip are in the index). The tape backup software actually replaced the original tape backup software that came with my CMS backup without telling me, rendering the tape drive useless when I was told to reconfigure it for PC Tools. While PC Tools' tape backup software decided to remove all traces of my original tape backup software, it couldn't figure out the proper IRQ and DMA settings for my CMS tape drive, and I'd left the original manual in storage during a move. Of course, I couldn't find *CMS* or *Colorado Mount Systems* in the index when I went to look up the problem.



Checking for illegal directory entries, cross-links, and lost cluster chains

Still, PC Tools for Windows gives you a really big bang for the buck. Like very few other Windows products, it manages to be both accessible to the beginner and deep enough for the power user. Like even fewer multipurpose products, it does a great job with everything it sets out to do—without getting in your way. ❐

Circle Reader Service Number 391

IBM PC or compatible (80386 compatible), 4MB RAM, Windows 3.1 or Windows for Workgroups, hard drive with 5–14MB free (depending on the number of modules installed), Microsoft-compatible mouse—$179.95

Central Point Software
15220 NW Greenbrier Pkwy., Ste. 150
Beaverton, OR 97006
(800) 964-6896

PERSONAL PRODUCTIVITY

William Harrel

RESOLUTION

Do you need 600-dpi resolution? It's all a question of image.

Just when you think an industry standard has been set, somebody moves the mark. All of the major manufacturers are championing low-cost 600-dpi printers.

There's nothing new about 600-dpi printers. High-end desktop publishers and graphics designers have used 600-, 800-, and 1200-dpi devices for a few years now. Until recently, high-resolution printers have been too expensive for personal use. Today you can buy one, such as the HP LaserJet 4, for less than $1,500 (if you shop around).

Why 600 dpi? Twice the resolution means twice the quality, right? Actually, 600-dpi resolution is four times higher than 300-dpi resolution.

In applications where the information is more important than the packaging, such as word processing and spreadsheets, 300 dpi is plenty of resolution. But newsletters, presentations, and sales proposals should look as slick as possible. This is especially true when you plan to reproduce them on a copy machine or at the print shop, where some quality invariably gets lost in the process.

Some 300-dpi printers don't handle large type well. Curved edges can print broken and uneven, and characters with diagonal legs, such as *M, V,* and *W,* print with jaggies (stairstepping). Small type can print with strokes (fine lines) broken up, or with circles *(b, d, p)* filled in. Higher resolution helps maintain fine lines and stroke weights in small text, and large text printed at higher resolution has smooth, sharp edges.

But where you'll really notice a difference is in graphical and gray-scale (photograph) images. Some graphics contain tight arcs and angular lines that 300-dpi printers can't print without jaggies. Jaggies result from dots too large to fill in—or smooth out—tight areas. The tighter dots of 600-dpi printers smooth out graphics much more effectively than the larger dots produced by 300-dpi printers.

Since laser printers simulate shades of gray by alternating black dots with white areas, 600-dpi printers have a significant advantage over 300-dpi printers. Photographs print more sharply at 600 dpi. You wind up with about four times the number of simulated shades of gray as on a 300-dpi machine. Printers with 300-dpi resolution are capable of only 25 shades of gray; 600-dpi printers can simulate more than 100 shades of gray.

The 600-dpi printers also print tighter screens, or percentages of black, in device-dependent graphics, such as those created by CorelDRAW!, Micrografx Works, and other draw programs. Screens create shading and other gray fills, such as Corel's graduating linear and radial fountain fills.

For many applications, 600-dpi resolution proves good enough for camera-ready art that is to be reproduced. Printers with 600-dpi resolution also make better proof printers. However, when you need perfect text and graphics, you'll still need to run your documents on an imagesetter at the neighborhood service bureau. Toner—what the printer uses to print—is still toner; it cannot produce fine lines and grays as well as imagesetters, even though today's toner is much finer than that of just a few years ago.

Not only do you get improved text and graphics from these new high-resolution printers, but they also print faster. New RISC processors and other innovations, such as improved parallel ports, halve the processing time. The Lexmark 4029's parallel port, for example, can accept two or three times more data per second than the ports of 300-dpi printers developed a few years ago. Several printers, such HP's LaserJet 4, are built around Intel's 20-MHz 80960 RISC processor, which processes data at breakneck speeds and requires less printer RAM, making the printers less expensive to produce and upgrade.

Other innovations, such as windows accelerators, also turn in record printing times. These combination software-hardware solutions use your computer's memory, TrueType fonts, and souped-up printer drivers for speeds as much as ten times faster than those of printers that do not support such solutions. ❐

With COMPUTE's SharePak, You'll

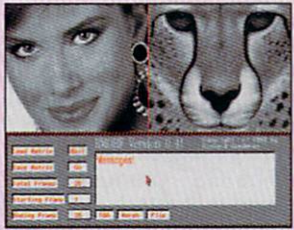
SHARE IN THE SAVINGS!

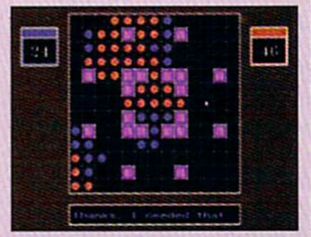
SAVE TIME
We carefully select and test all programs for you

SAVE MONEY
Each disk includes two to five programs for one low price

SAVE KEYSTROKES
Our free DOS shell lets you bypass the DOS command line

November's
SharePak
disk
$2.99
per program!


Morph your friends with Rmorf.



Conquer the enemy in Flux.

Rmorf 0.4
You've seen morphing done in hit movies—now get ready to try this new technology at home. Rmorf takes two images and smoothly blends them into each other. Just load up two GIF or 24-bit TGA images, place a corresponding grid over the images, and start the morphing process. Unlike other morphing programs, which can take several minutes to do a single frame, Rmorf morphs each frame in just a few seconds. Frames can be output as GIF or TGA files, and can also be made automatically into an FLI animation file. Rmorf requires VGA graphics and 938K of XMS. Registration is $25.

Flux 1.1
Challenge your computer opponent in one of the most addictive games you'll ever play in this new strategy board game for one player. Every time you land beside an enemy piece, it changes to your color and becomes yours. Flux features many unique setups and has three difficulty levels. Flux requires VGA graphics and a mouse. Registration is $15.

COMPUTE's SharePak disk contains the best of shareware—handpicked and tested by our staff—to complement this month's focus. You'll sample entertainment, learning, and home office software at a great savings. Each SharePak disk includes two to five programs plus complete documentation for one low price:

$5.95 for 5¼-inch disk
$6.95 for 3½-inch disk

**For even more savings,
Subscribe to SharePak and receive
COMPUTE's SuperShell FREE!**

For a limited time, you can subscribe to COMPUTE's SharePak and save more than 37% off the regular cost of the disks—plus get COMPUTE's SuperShell **FREE.** With a one-year paid subscription, you'll get

- A new 3½- or 5¼-inch disk delivered to your home every month
- Savings of over 37% off the regular disk prices
- Advance notices of COMPUTE special offers
- COMPUTE's SuperShell at no additional cost!

Subscribe for a year at the special rates of $59.95 for 5¼-inch disks and $64.95 for 3½-inch disks—**and get COMPUTE's SuperShell FREE!**

COMPUTE's SuperShell requires DOS 3.0 or higher.
Disks available only for IBM PC and compatibles. Offer good while supplies last.

For Single Disks
Please indicate how many disks of each format you would like:

_______ 5¼-inch at $5.95
_______ 3½-inch at $6.95
_______ Subtotal
_______ Sales Tax (Residents of NC and NY, please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.)
_______ Shipping and Handling ($2.00 U.S. and Canada, $3.00 surface mail, $5.00 airmail per disk)
_______ Total Enclosed

Subscriptions
I want to save even more! Start my one-year subscription to COMPUTE's SharePak right away. With my paid subscription, I'll get a FREE copy of COMPUTE's SuperShell plus all the savings listed above.

Please indicate the disk size desired:

_____ 5¼-inch at $59.95 per year _____ 3½-inch at $64.95 per year

For delivery outside the U.S. or Canada, add $10.00 for postage and handling.

Important Notice: COMPUTE's SharePak is not associated with COMPUTE's PC Disk. Please order ShaePak separately.

Name _______________
Address _______________
City _______________
State/Province _______________ ZIP/Postal Code _______________
Total Enclosed _______________
_____ Check or Money Order _____ MasterCard _____ VISA
Credit Card No. _______________ Exp. Date _______________
Signature _______________ (Required)
Daytime Telephone No. _______________

Send your order to COMPUTE's SharePak, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

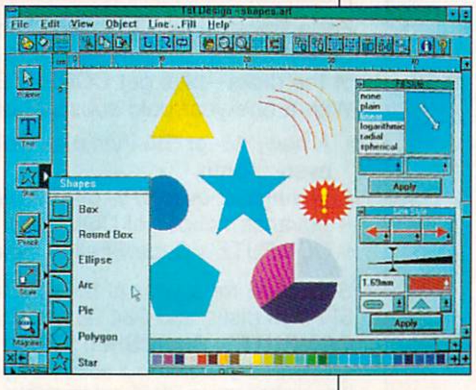
All orders must be paid in U.S. funds by check drawn on a U.S. bank or by money order. MasterCard or VISA accepted for orders over $20. This offer will be filled only at the above address and is not made in conjunction with any other magazine or disk subscription offer. Please allow 4–6 weeks for delivery of single issues or for subscription to begin. Sorry, but telephone orders cannot be accepted.

ART WORKS

Robert Bixby

DEAD REPTILES: SOFTWARE EVOLUTION

Are you as tired of dinosaurs as I am? If not, check out Jurassic ART from Computer Support (15926 Midway Road, Dallas, Texas 75244-9982; 214-661-8960; $59.95). It's a special packaging of Scenerio (reviewed in an earlier column). Computer Support has always been known for its clip art, and it's brought something new and interesting to the genre—a little flexibility. Jaws and limbs of certain pieces of dinosaur clip art can be ungrouped from the rest of the drawing and rotated to change the pose. Kids will love the drawings you create with Jurassic ART, if dinosaurs haven't gone the way of the pet rock and the Davy Crockett hat by the time you read this.



Low-cost products aren't necessarily low-end. Like PagePlus and GeoWorks, 1st Design provides inexpensive power.

Lizards have popped up in the chat areas online as well. Among the Rush Limbaugh dittohead clubs and invitations to twisted trysts, Barney (the kid-show dino) is appearing in the names of chat rooms such as Death to Barney.

If you're looking for a GUI with a collection of useful apps like spreadsheet, database, and word processor, GeoWorks Ensemble 2.0 is out—and has been out for some time now. Unfortunately, the folks at GeoWorks (2150 Shattuck Avenue, Berkeley, California 94704; 510-644-0883; $79.95) wouldn't let me write about the product until it was on the market.

GeoWrite, the program most directly applicable to this column, has a lot of new desktop publishing capabilities including master pages and frames. You can use all of the fonts you've been using with 1.2. The new GeoWrite automatically converts 1.2 documents to 2.0 format, but although you can export to several other formats (not just ASCII), you can't export to a GeoWrite 1.2 format.

GeoDraw is now packed with drawing utilities including curve editing and more import filters. At their most advanced level (all apps in 2.0 feature four levels of operation), each of the major applications incorporates GeoDraw, so you can use all of the drawing tools within GeoDraw and GeoWrite as well as within the spreadsheet and database.

GeoWorks Ensemble 2.0 is a faster, friendlier, larger collection of even more useful utilities and applications than version 1.2. Desktop publishers should consider it among other low-cost desktop publishing options. GeoWorks seems to be more interested in third-party support this time around, having already run a "boot camp" for outside developers.

I might as well admit that I love a bargain. GST, the developer of Timeworks' line of desktop publishing programs, is going to introduce a Windows illustration and design program called 1st Design at the incredible price of $49.95.

With 53 TrueType fonts, 1st Design features a simple autotrace, polygons and stars, gradient fills, Bézier curves, blends, and typographical manipulation (like kerning, fitting to path, and spacing) worthy of a product several times its price.

The 1st Design product does lack masking and hole-cutting features, however.

The GST product was released in the U.S. in September, though it's been available in Britain for some time. GST can be reached at Meadow Lane, St. Ives, Huntingdon, Cambridgeshire, England PE17 4LG; 011-44-480-496-789. As of this writing, GST doesn't have a U.S. address.

A second GST program, 1st Press, may also be introduced. It's a frame-based Windows desktop publishing package reminiscent of Ventura Publisher.

There's stiff competition at the low end of the price spectrum from products like PagePlus (Serif, P.O. Box 803, Nashua, New Hampshire; 800-697-3743), which is being compared with high-end desktop publishing programs like QuarkXPress but sells for only $59.95. A fonts package (with 120 TrueType fonts) and a type manipulation package are available for $19.95 each.

Have a DTP tip you'd like to share? Let me know about it by calling (900) 884-8681, extension 7010203 (sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078). The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Or write to "Art Works" in care of this magazine. And if you don't have a tip, please let me know what you're publishing, what software you're using, and how "Art Works" can help. ❐

Elvis Is Alive

Kar-A-O-Ke
Turtle Beach MIDI Karaoke™

... and well, with 24 other artists in the hottest, least expensive, most professional sounding, MIDI Karaoke on the market today!

Customize each song to fit your voice perfectly with our pitch and speed controls. Use any of our 25 song selection — from Broadway greats to today's biggest hits — or create your own hits ... it's easy since MIDI Karaoke uses standard MIDI files.

But wait, there's more ... Turtle Beach MIDI Karaoke is the only Karaoke application with the bouncing ball. Yes, from word to word, our bouncing ball guides you perfectly through the song so you sing the right words at the right time.

AND...most, most, most importantly, it's the only Karaoke application that allows you to record your own voice directly to the hard drive while you're singing and then play back the entire file — music and voice together!!

Only $49

So don't get all shook up. Get all this and more for only $49!

See your favorite dealer, or call **800-645-5640** and order your Turtle Beach MIDI Karaoke today.

WORKS WITH ANY SOUND CARD!

TURTLE BEACH SYSTEMS

P.O. Box 5074 • York, Pennsylvania • 17405 • 717-843-6916 • FAX: 717-854-8319

Circle Reader Service Number 193

POWER TOOLS

Add Greater Music And Sound Capability To Your Sound Card.

Turtle Tools For Multimedia ™ brings the music and sound capability of your sound card to its fullest potential.

It's fun. It's easy. It's for everyone who has ever wanted to create and play music ... whether you are a complete amateur or a professional.

Create your own music; produce a business presentation; play songs on your PC keyboard; edit voicing, mix levels, tempo, key, etc. ... and make beautiful professional quality sound.

See your favorite dealer, or call **800-645-5640** today!

ONLY $89

TURTLE TOOLS
FOR MULTIMEDIA

Turtle Tools For Multimedia includes ...

- 350 sound effects on CD (CD ROM not required).
- 90 MIDI files.
- Midisoft Session™... graphic MIDI sequencer, for developing or editing musical compositions.
- SoundAttach™... attach MIDI or WAV files to all windows or application events.
- MIDI Tune-Up™ ... MIDI file editor for nonmusicians, lets you graphically change tempo, key, instruments, etc.
- KeyPlayer™ ... play and record music using just your PC keyboard.
- SoundBank™ ... 300 sound effects and musical clips on CD (CD ROM not required).
- WaveTools™ ... Wave audio recording, editing, and playback.

WORKS WITH ANY SOUND CARD!

TURTLE BEACH SYSTEMS

P.O. Box 5074 • York, Pennsylvania • 17405 • 717-843-6916 • FAX: 717-854-8319

Circle Reader Service Number 247

DISCOVERY CHOICE

Encounter the strangest aliens ever seen in our solar system as you track Carmen Sandiego.

Clayton Walnum

WHERE IN SPACE IS CARMEN SANDIEGO?

Where in Space is Carmen Sandiego?
Peterson First Guides
Astronomy
Jay M. Pasachoff
Broderbund
MS-DOS

The world's favorite villain, Carmen Sandiego, sure does get around. She began her illustrious career by hopping across the globe, committing new crimes wherever she set down her jet. Since then, not only has she victimized every corner of the earth, but she has also managed to find her way through time and America's past. Now, in Where in Space Is Carmen Sandiego?, her crime spree leads into the great expanse of the universe, where a gang of dastardly aliens joins her to terrorize the solar system from the sun to lonely, frozen Pluto.

If you're familiar with the other Carmen Sandiego games, you'll be able to slip into this new installment like a pair of favorite slippers. Although your crime stopper vehicle has metamorphosed into the Cosmohopper and the game controls have been rearranged, the basic gameplay is identical to that in the other games in the series.

You begin by getting your assignment from the chief, a bizarre alien who looks like a cross between Jabba the Hut and a parakeet. Because the squeaking and squawking he passes off as language is incomprehensible to human ears, your Cosmohopper's main screen displays the conversation in English. When you get your first assignment, you learn that, as always, Carmen and her gang are snatching valuable artifacts. For example, the chief may tell you that the culprit has stolen the Skynd crater from Uranus's moon Umbriel, the Sacajawea from Venus, or Hermes's winged hat from Mercury.

With your mission recorded, you blast off to the place the Sandiego gang was last seen. To complete your mission, you must search several of 32 locations for 1 of 15 suspects. Locations you'll visit include not only the nine planets but also the sun, asteroids, Halley's comet, and many moons. The 15 aliens that make up your suspect list are as different from each other as a tomato is from an anteater. Sporting such punny names as Astro Fizzix, Avery Littlebit Phelps, and Hanover Fist, these creatures represent some of the strangest life forms ever seen in our solar system.

Besides the villains, you have your on-board computer, VAL 9000, to keep you company. Using VAL, you can access an online database, dossiers on the various criminals, a travel log, and the game options. In addition, VAL sometimes uses her digitized voice to relay such sarcastic comments as "What do you think the little *E* stands for on your fuel gauge?" and "A rocket scientist you're not. You've eliminated all suspects."

Upon arrival at your new location, you gather clues by questioning witnesses, tapping into V.I.L.E. radio frequencies, or performing a star search for incoming messages from your colleagues. Witnesses and V.I.L.E. radio transmissions immediately give you clues to your next destination. When performing a star search, however, you must first use the star map to lock onto the constellation from which the transmission was sent. To find the constellation, you use the controls on your Cosmohopper to scroll the star map to the correct longitude and latitude, at which time the selected constellation spins to the right of the screen and displays its associated animated image (for example, a bull for Taurus).

Finding where the culprit has fled is only half of your battle, though. You also need to learn the criminal's identity so you can get a warrant for his or her arrest. To do this, you contact an informant, who tells you about one of the creature's seven characteristics: gender, number of eyes, feature, locomotion, favorite writer, favorite astronomer, and favorite food. You might, for example, discover that the creature has no eyes, loves the writings of H. G. Wells, or snacks on space cadets.

After deciphering the clues, you choose your next destination. To help narrow things down, the Cosmohopper's display offers a menu of four locations, one of which is correct. Clicking on a location sends your Cosmohopper blasting into space. When you arrive, you're shown a digitized NASA photo of the location. If the location you picked is correct, you enjoy a short, animated sequence of a V.I.L.E. henchman's outer-space antics. One animation features a one-celled creature that divides into two and, upon seeing its twin, flees in terror. Another depicts a creature covered with suction cups that gets stuck to your screen. All told, there are about a dozen of these humorous sequences.

After the V.I.L.E. henchman skedaddles, you begin the clue-gathering process again. Eventually, after several jumps to various locations in the solar system, you catch up with the criminal and make your arrest—assuming, of course, that you arrive in time, don't run out of fuel, and have the proper warrant.

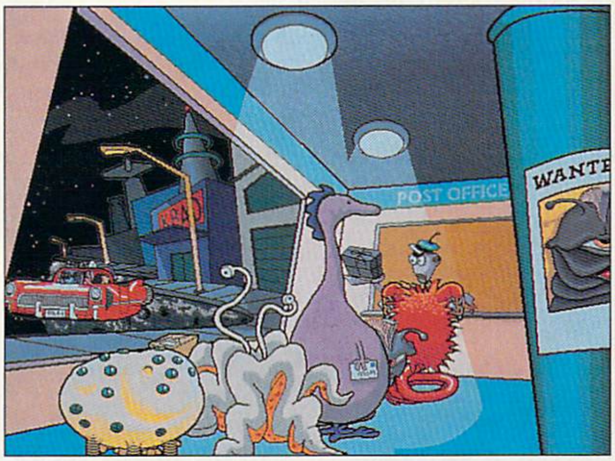
One thing that sets Where in Space apart from the other Carmen Sandiego games is its huge online database. Although the game comes with *Peterson First Guide to Astronomy,* you don't need it to play. All answers to the clues can be found in the online database, which is accessed through your Cosmohopper's VAL 9000 computer.

The database menu allows you to select any of 18 general topics, including each of the planets; such topics as astronauts, astronomers, and explorations; and a glossary of astronomical terms. When you select a general topic, a list of subheads appears, enabling you to jump to a specific topic of interest with a click of the mouse. To find topics even more quickly, you can enter a word into the text entry area, and the computer will search the database for every occurrence of the word, after which you can browse all the identified entries for the information you need.

Most entries in the database include digitized graphics. As you browse through the database, you'll come across portraits of astronauts and astronomers, photos of planets and moons, cross sections of celestial bodies, and images of satellites, just to name a few. Animation, too, is used to good effect in the database, from orbiting planets to the birth of the sun to an awe-inspiring flight over the surface of Mars that was constructed from actual photos taken by the Viking.

In short, the astronomy database included with Where in Space is worth, by itself, the price of the entire package. And it's very easy to use; you can access it without having to play the game simply by typing *carmen val* at the DOS prompt. Even after you've grown tired of the game (if that's possible), the database is sure to continue to fascinate.

If Where in Space has a weak point, it's the same one found in previous games in the series: There just aren't enough animated sequences. Although the animation adds much to the game at the start, it doesn't take long before the sequences start repeating. You can stop an animation at any time by clicking a mouse button, so you aren't forced to watch them again and again. But the game would be much improved with enough animated sequences to carry the player through a full game with minimal repetition.



Still, Where in Space Is Carmen Sandiego? is yet another wonderful entry into an already long and successful line of educational computer games. Plus it's a fascinating romp through the solar system featuring awesome digitized photos from NASA's own files and a clever gang of otherworldly characters. You have to wonder, though: Now that Carmen has made it through America, Europe, the world, time, America's past, and space, where can she possibly go next? ❐

Circle Reader Service Number 392

IBM PC or compatible (80386 compatible), 640K RAM, VGA, hard drive with 8MB free; mouse recommended, most sound cards supported—$79.95

BRØDERBUND SOFTWARE
P.O. Box 6121
Novato, CA 94948-6121
(800) 521-6263
(415) 382-4400

USA™

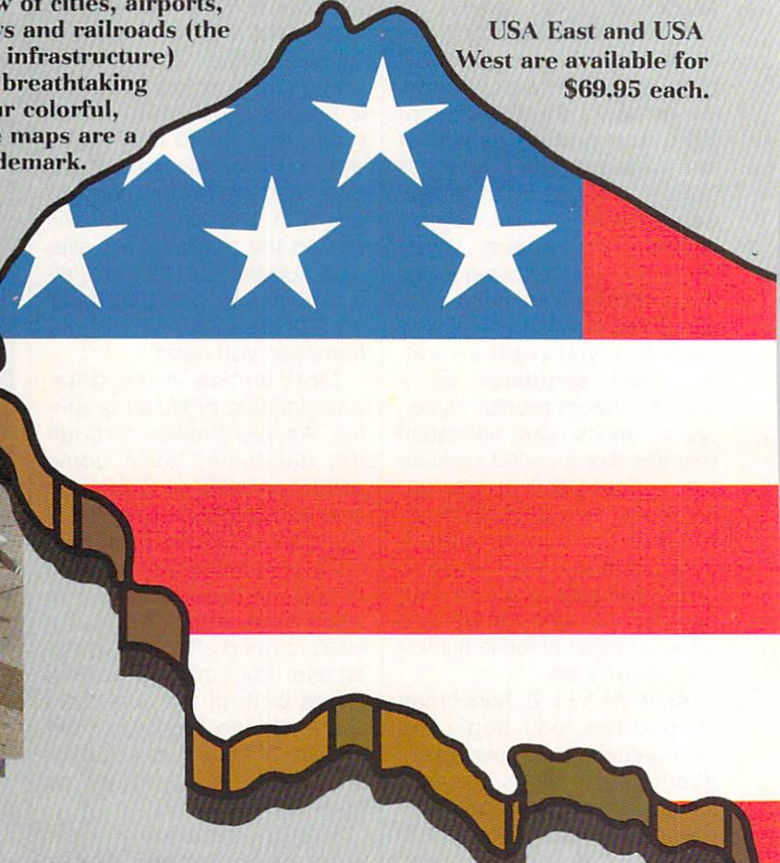
SubLOGIC has carved a unique market niche as the sole publisher of aviation edutainment software. Our simulation technologies have been bringing flight into the home since 1977. Let us introduce you to the TOTAL FLIGHT EXPERIENCE.

Simulation features like high fidelity flight dynamics, special flight graphics and sound, verbal and visual guidance systems, locator and facility control menus, and a structured flight assigner give you an extremely rewarding flight experience. Our user friendly software guides you from takeoff, through easy visual and radio enroute navigation, to a successful landing at your destination.

Two separate sets, USA East and USA West, cover the eastern and western sections of the country. Together they give you comprehensive visual scenery coverage of the entire United States plus every paved public-access airport, nav-aid and instrument approach. A continuous flow of cities, airports, rivers, highways and railroads (the entire national infrastructure) makes flying a breathtaking experience. Our colorful, comprehensive maps are a SubLOGIC trademark.

USA (also for Great Britain Scenery Collection). All you have to do is specify a time frame and difficulty level, select a flight, and print a copy of your flight log. Spoken Air Traffic Control messages come alive nationwide (with ATP or Air Force and optional SoundBlaster sound card).

USA East and USA West are available for $69.95 each.



SubLOGIC - Dedicated to bringing you the total flight experience!

All SubLOGIC flight simulations, and Microsoft Flight Simulator, can be greatly enhanced with the USA add-on.

USA

USA integrates three products in one coordinated package; a structured flight assignment system, a comprehensive scenery management system and, of course, a nationwide scenery platform.

USA's scenery management system provides instant inflight information about or relocation to any airport or nav-aid facility. Navigation aid symbols can be turned on an off as desired to help you visualize the location of all radio nav-aids. Huge floating traffic patterns and runway approach arrows guide you down to a safe landing at the destination airport.

The automatic flight assignment system designs structured flights for

Flight Simulations

Our aviation dedication is demonstrated in two low-priced simulations. Many flight sim developers have abandoned the general public to create new products specifically for the latest high-end, ultra-fast machines. Our simulations can run optimally on family-oriented 16MHz through 33MHz computers. We've also taken extra effort to ensure that

Colorful Comprehensive Maps are a SubLOGIC Trademark

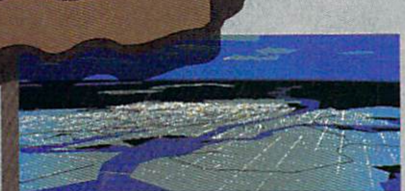
8MHz 286 and top-end users alike will enjoy the SubLOGIC flight experience.

Flight Light

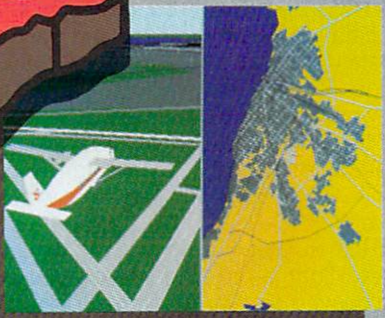
No more "Oh, I tried it before and I crashed!"

Introducing Flight Light, a simple yet full-featured flight simulation designed to give you a fun and successful flight experience. Fly your Cessna jet along flight corridors from New York to Boston, Chicago/Champaign, Los Angeles/San Diego, and now Dallas/Austin. A practice flight mode makes it impossible for you to crash. Pitch/power visual cues show you what settings to use to climb, cruise, descend and land. A second window view can lock onto your destination airport or onto the all-important horizon. Visual track-to-destination arrows, traffic pattern indicators and radio nav-aid markers can be turned on or off any time. Program features are organized under a brand new menu system that offers context-sensitive help.

Our devotion to bring aviation to the world inspired us to release Flight Light at the ultra-low price of $19.95, so you can get one for yourself or stuff the world's Christmas stockings.



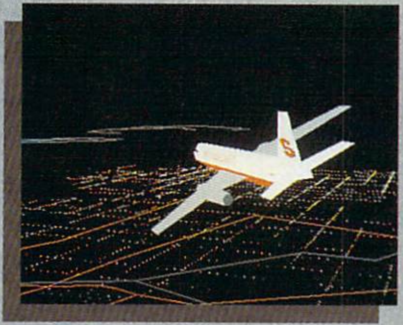
New York City at Dusk



Midway Airport and Map View

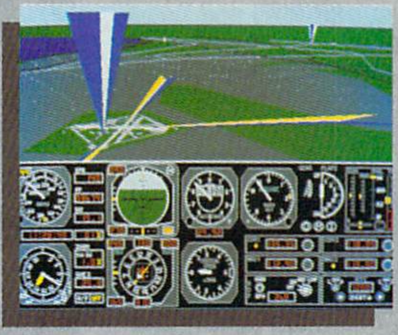
Flight Assignment: ATP

The renowned complete jet airliner simulator, now available for a low $44.95. Sit back and watch the ingenious autoflight mode fly a Boeing 737 or any of four other heavy transport aircraft across the country. Listen to the voice of Air Traffic Control guide the aircraft from takeoff to touchdown (with SoundBlaster sound card). When you're ready to earn your wings as an Airline Transport Pilot, take the controls and fly any of hundreds of predefined flight assignments.



USA Night Flight

ATP's proprietary Air Traffic Control system* really excels when used in conjunction with USA. The combination of ATP with USA is such a natural, we've decided to include the ATP simulation on the CD-ROM version of USA East/West. This combo package will keep you flying to new places for many years to come!



VOR and ILS Nav-Aid Symbols

All products available for IBM/compatibles. See your dealer, or feel free to call our friendly and knowledgeable staff at 800-637-4983 for additional information.

Flight Assignment, Flight Light, and Scenery Collection are trademarks of SubLOGIC. * ATC system patent pending. All other products and brands are trademarks or registered trademarks of their respective owners.

the Computer Flight people

subLOGIC®

TELEPHONE: (217)359-8482
FAX: (217)352-1472
ORDER LINE: (800)637-4983

Circle Reader Service Number 179

GAME INSIDER

Shay Addams

SPECTRUMPROSE HOLOMICROBYTE?

When Sierra asked Jim Walls to do another Police Quest, he turned in his badge and did Blue Force for Tsunami instead. The game turned out even better than some of his Police Quest work, and a sequel is underway. Sierra turned to another law enforcement veteran, former Los Angeles police chief Daryl Gates, to codesign Police Quest IV. And it made the latest cop-on-the-beat adventure a cross-media event by bringing in "America's Most Wanted" producer Tammy Dargan to produce the game, which Sierra says creates a "whole new category of gaming: reality role-playing."

LucasArts' Day of the Tentacle is selling equally well on CD-ROM and floppy.

In a story set in contemporary Los Angeles, you play detective John Carey, out to find a killer who has "worked the media and public into a frenzy." Nowadays, Sierra is making an effort to differentiate its adventures, and the twist is technological in this latest Police Quest—it marks the first use of Kodak's DCS 200Ci digital camera in creating a computer game. Gates took the design team on location with the camera in downtown L.A. to shoot many of the color background scenes. Due out this month for MS-DOS, the game is also scheduled for CD-ROM and the Mac. (Rumors that the Gates-designed game includes a video camera are unfounded. Or at least there wasn't one in my package.)

In the fantasy realm, Sierra has transformed its TSN (The Sierra Network) multiplayer game Shadow of Yserbius into a single-player quest for PCs. The boxed edition includes a new chapter in the Yserbius saga and other new features. In November, look for Inca 2 and Goblins 3 (both created by Coktel Vision) and Quest for Glory IV: Shadows of Darkness from Sierra.

New engine, new world. Instead of just bringing out yet another Magic Candle game with a new software engine under the hood, designer Ali Atabek let the Candle series go out with the third installment. Atabek did develop an all-new engine, but he harnessed it to drive a fresh fantasy world and story line for Mindcraft's latest role-playing series, The Griffon Masters. The first installment is already out. And if you miss playing the original Magic Candle games, try The Bloodstone, which employs the same engine.

A first in the realm of "utilitainment" software, Walt Disney licensed some of its characters to Berkeley Systems, which does the After Dark screen saver. The new screen saver features animations from *101 Dalmatians, Beauty and the Beast,* Mickey Mouse shorts, and other cartoon classics. Disney reportedly worked closely with Berkeley on the product and plans more such licenses and more coproducing in the future. Already out for the Macintosh, the screen saver should be shipping for Windows by now.

Sequel time. Origin's Wing Commander Academy lets you design new missions and trade them with friends or play new randomly generated missions. It's a stand-alone game, so you don't need the original program. But don't look for another Wing Commander for a while. Wing Commander III isn't slated for release until late 1994. But at least the construction set doesn't signal the end of the series, like it did with SSI's Unlimited Adventures construction set for Gold Box games. Origin is using the Strike Commander technology in upcoming titles such as Privateer, a trading and combat game which takes place in the depths of outer space, and Pacific Strike, which re-creates World War II dogfight action.

LucasArts' new variety pack, Classic Air Combat Sims, contains Battlehawks 1942, Their Finest Hour, and Secret Weapons of the Luftwaffe, along with all the Tour of Duty disks. Adjustments were made so the joystick routines and other aspects of the older programs function well on a 486. B-Wing is LucasArts' second mission disk for X-Wing. It introduces a new craft to fly, as well as the fifth Tour of Duty. Spectrum HoloByte's MiG-29 is the slickest and most substantial mission disk of the year, letting you take the other side in the Falcon 3.0 war.

Will CD-ROM games really sell? LucasArts simultaneously released Day of the Tentacle on floppy and CD-ROM. A major distributor reported the versions selling about equally—a good sign for the newer format. Other new CD-ROMs to look for this fall are Electronic Arts' Labyrinth (originally designed for CDTV) and Brøderbund's The Myst, both CD-ROM–only adventure-style games. Other recent CD-ROM releases worth looking for include I-Motion's Shadow of the Comet (mixing action and adventure) and Alone in the Dark II (adventure in a Gothic horror setting), as well as LucasArts' action-arcade game Rebel Empire (the company's first CD-ROM–only title).

The hot news as this was being written was Spectrum HoloByte's acquisition of MicroProse, a deal that pumped $10 million into the latter company. MicroProse's balance sheet, it's rumored, was inspiration for the title of Legacy: Realm of Terror, which was released prior to the deal. The plan is for both companies to operate independently. ❐

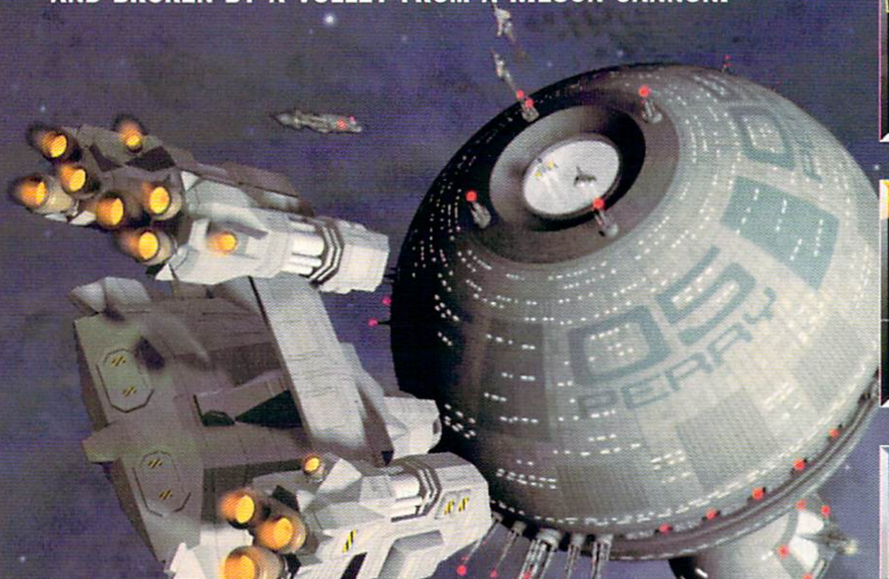
WING COMMANDER®

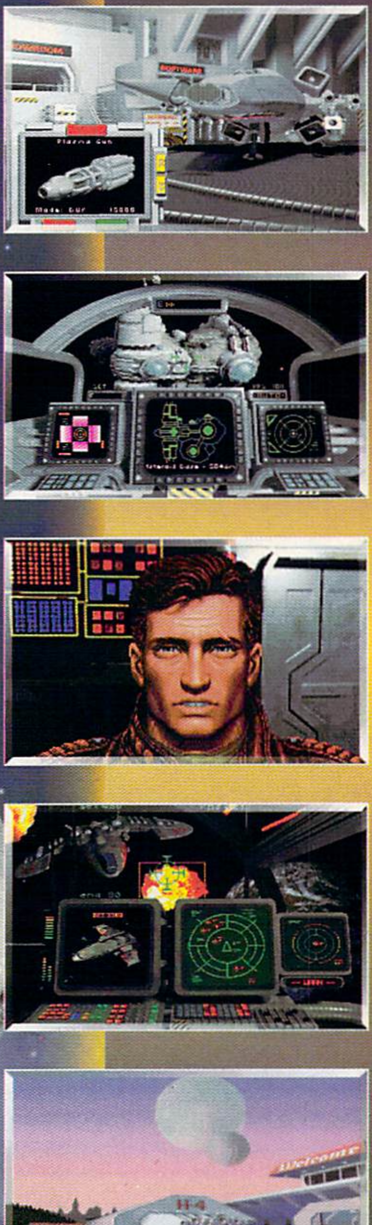
PRIVATEER™

**THE WAR AGAINST THE KILRATHI RAGES ON.
TO SOME, IT MEANS DEATH, SLAVERY OR DISHONOR...
TO OTHERS, IT'S THE CHANCE TO MAKE A QUICK BUCK.**

- Make your own alliances and choose the life of a pirate, merchant or mercenary. You accept your assignments from the Mission Computers, Mercenary's Guild, Merchant's Guild or the nefarious fixers that inhabit every bar.
- Customize your ship according to your needs and budget - you can modify weapons,armor and other systems. You'll need them since your enemies want more than just a new fill stenciled on their prow - they also want your cargo.
- Upgrade your ship, from your grandfather's old Tarsus scout to the sleek Centurion fighter or Orion gunship - combat plays a vital role no matter how you decide to earn a living.
- Explore a complete universe with more than 50 bases and planets in almost 70 systems - agricultural bases, merchant colonies and mining planets.

PRIVATEER - WHERE DEALS ARE MADE WITH A HANDSHAKE AND BROKEN BY A VOLLEY FROM A MESON CANNON.





Actual screens may vary.

ORIGIN®
We create worlds®
An Electronic Arts® Company
P.O. BOX 161750 AUSTIN, TX 78716

Privateer is a trademark of ORIGIN Systems, Inc. Wing Commander, Origin, and We create worlds are registered trademarks of ORIGIN Systems, Inc. Copyright © 1993 ORIGIN Systems, Inc. Electronic Arts is a registered trademark of Electronic Arts. For IBM PC and 100% compatible systems.

Circle Reader Service Number 248

ENTERTAINMENT CHOICE

Surge into the future, where you fight to regain the throne of the ancient Incan people in this stunning blend of folklore and science fiction.

Scott A. May

INCA

Adrift in time and space, you awaken to fulfill a destiny written more than 500 years ago: savior to the lost Incan civilization. So begins one of the year's most audacious and original games—an action-adventure born of a rich past, set in the unknown future.

Imported from French software developer Coktel Vision, Inca showcases the rising talent of designer Pierre Gilhodes, who gave Sierra's Gobliiins its distinctive punch. Gilhodes's latest combines many disparate styles and gaming genres, strung together with a thoroughly out-of-kilter story line. What in theory should never work unfolds with singular grace and clicks in our imaginations.

To fully appreciate Inca, you must immerse yourself in its unusual background, based equally in fact and fable. The story begins in 1525, as an aging Incan ruler named Huayna Capac foretells the fall of the great Tawantinsuya empire. He predicts floods, earthquakes, and the arrival of "bearded savages"—Spanish marauders lured by tales of "the gilded one," El Dorado. According to legend, El Dorado was an Incan chief who would cover himself in gold dust for ritual celebrations. As a sacrifice to the god of nobility, he'd wash off the gold in the waters of Lake Titicaca. Followers would also toss gold into the lake to appease the sun god.

In 1532, Spanish conquistadors, led by Francisco Pizarro, waged battle on the mighty Incan warriors. Though the Spaniards were outrageously outnumbered, the Incan army, weakened by years of civil war, was soon defeated. Pizarro's men, however, found little gold. As Capac says, "The real treasure—Inca knowledge—will never be found."

From this beginning, Inca blasts 500 years into the future, aboard the lost city Paititi, which is adrift in space. You're approached by the spirit of Huayna Capac, who welcomes your return as El Dorado. Your mission is to restore brilliance to the Incan sun by recovering the three missing jewels of Time, Matter, and Energy. To succeed, you must win the help of various spiritual protectors and defeat the powers of Aguirre, an evil force symbolic of the greedy, savage conquistadors.

Your journey unfolds along a linear path that's divided into three phases, one per jewel, of increasingly diverse and difficult quests. The game offers a satisfying mix of arcade and mental challenges, ranging from 3-D space combat and first-person shootouts to mind-bending graphic and logic puzzles. You must confront and overcome obstacles in a prescribed order. While unsolved puzzles merely stall your quest, failed arcade segments result in loss of life. Instead of traditional game saves, randomly generated pass codes allow you to restart the game at various milestones in your journey.

The cursor-driven graphic interface functions in two modes: cockpit and ground views. Behind the controls of your Tumi fighter, the cursor serves as both weapons crosshairs and navigational device. Some of the action you'll encounter includes asteroid belts, Star Wars–style trench combat, and deep-space dogfights. Your toughest (and most unusual) galactic battle kicks off the game's final phase, as you square off against authentic Spanish galleons. These huge, three-masted ships firing comet-sized cannonballs are as unsettling as they are deadly.

Ground exploration features a similar windowed display, with a visual inventory and limited online advice from Huayna Capac. Besides fighting, you also pick up and manipulate objects, which are key to solving the game's series of visual puzzles. Correct moves trigger dazzling audio and visual rewards, enticing you to press on. Other elements of play include multiple 3-D mazes and realtime duels to the death with Aguirre's space-age warriors, fought with plasma bolts instead of swords. These otherwise simple slugfests are heightened considerably with outstanding full-motion digitized video and sizzling sound effects.

The game's graphics are extraordinary—an opinion echoed at the 1992 Paris Supergames Show, where the title won honors for best graphics. Much of the game's visual appeal stems from its superb use of color as well as its sheer variety of graphic styles, from Gouraud-textured 3-D polygons to finely detailed scanned bitmap artwork. Complementing the animated actors is a full range of crisp, digitized speech, much of it delivered in the authentic Quechuan tongue. For those unfamiliar with this arcane culture, the main menu offers an online glossary of terms used throughout the game. Other sampled sound effects include goose bump–inducing footsteps and slamming doors as well as the atmospheric groans and creaks of the wooden galleons rocking in space.

Dynamic on disk, the game is absolutely stunning on CD-ROM, offering enhanced cinematic segues, full character voices, and stereo soundtrack. Inca's CD-ROM audio is unlike that in any other CD-ROM game on the market. It uses true CD audio, not just the computer's sound card, and the result is absolutely incredible.

Gilles Douieb supplies 14 pieces—over 40 minutes—of original New Age–style music, performed with authentic Incan woodwinds and percussion. Also included is the song, "Inca People," written and performed by J. M. Marrier. A minor hit on European radio, the song adds flair to the CD-ROM version's extended graphic intro. An audio interface, built into the main menu, allows instant access to any of the CD-ROM's music tracks. There's even an onscreen *antara* (bamboo panpipe) for those inclined to play along, available in both versions. Overall, Sierra's multimedia treatment transforms an uncommonly good game into a true work of art.

CD-ROM version of Inca

Despite the game's unusually rich graphics and sound, the game makes surprisingly minor hardware demands, running equally well on both low-end (80386/20 minimum) and high-end (80486/66) systems. The biggest price paid is hard drive space, which ranges from 16MB for the disk version to 33MB for the CD-ROM version. One nice touch: Sierra's CD-ROM installation offers four configuration choices, allowing you to transfer 100, 70, 25 or 0 percent of the game to hard disk. Because of the game's segmented story structure and effective memory usage, most users with reasonably fast CD-ROM drives (250- to 350-ms access time) can get by with minimal hard drive installation.

As with most bright gems, this one has a few minor flaws. One of the most annoying is simply the speed at which onscreen text—usually important clues or dialogue—appears and quickly vanishes. Given the game's eccentric nature and enigmatic prose, this loss of information can easily lead to confusion. The designers should've given players control of text flow or at least provided a way to pause the display. Also disappointing is the poorly implemented joystick routine, an arcade setback softened only by the game's well-designed mouse controls. Finally, once solved, the game provides little replay value. A possible solution would be to scramble some puzzles or to increase the difficulty level of the arcade sequences.

Inca's surrealistic blend of ancient folklore and science fiction will throw many players off guard. But those looking for a wholly original, multifarious challenge will delight in this fantastic journey of sight, sound, and imagination. ❐

Circle Reader Service Number 393

IBM PC or compatible (20-MHz 80386 or faster), 640K RAM, 256-color VGA, hard drive with 18MB free, mouse; joystick optional, supports Sound Blaster, Ad Lib, Thunder Board, Pro AudioSpectrum, and compatible sound cards—$59.95 (disk), $69.95 (CD-ROM)

SIERRA ON-LINE
P.O. Box 485
Coarsegold, CA
93614
(800) 326-6654

GAMEPLAY

Paul C. Schuytema

ROMP ON THE WILD SIDE

Become a Wild West pharmacist in Al Lowe and Josh Mandel's latest zany world.

First, grind up a portion of Bimthylquinoline crystals; then add just a touch of Metyraphosphate. Dispense as a powder, and presto! Birth control for the radical woman of the 1880s. This and other exciting recipes can be yours to concoct in Freddy Pharkas, Frontier Pharmacist, the latest adventure from the twisted minds of Al Lowe and Josh Mandel.

Freddy Pharkas is the first truly fresh idea for an adventure game that I've seen for quite some time. The game takes place in Coarsegold, California, in 1888—just a few years after the gold rush. Our hero, Freddy, is not a gunslinger (although he once was); he's a pharmacist who also runs a soda fountain on the side.

I spoke with designer Al Lowe about the game, and I was particularly interested in how he came up with the idea of Wild West pharmacology. It seems that the team at Sierra On-Line had already committed to doing a comedy Western game, since it was a hitherto untapped niche in the adventure market. Lowe, along with Mandel (the adventure's producer and writer) and Roberta Williams (of Laura Bow fame) were sitting around, brainstorming, looking for a central character. Lowe somehow got his tongue twisted as he attempted to say "farmer" and "rancher" at the same time, and "pharmacist" came out. Within minutes, the three of them were laughing so hard that they were rolling on the floor. The idea of a frontier pharmacist was one of those ingenious mistakes, and it was perfect.

Freddy is a Dudley Do-Right sort of guy. He has a diploma and is struggling to keep his village from becoming just another ghost town.

A few things really stand out in this adventure. First is the feeling of a true environment: Coarsegold seems to be living and breathing even when Freddy isn't there. The town is a side-scrolling work of art. It was first created as a six-foot-long painting, and then it was digitized into the computer. (The original is now hanging at the Sierra offices in modern-day Coarsegold.)

Beyond just looking gorgeous, the town is a closed system that allows Freddy to wander, explore, and interact with the characters in a very convincing way.

The game's puzzles are also outstanding. Face it: Any good adventure game is simply a good story braided with a series of player-solvable puzzles. But all too often, the puzzles fit a routine formula or are so obtuse that people in their right minds can't begin to solve them.

In Freddy Pharkas, the puzzles are difficult yet solvable, and there's more player involvement. But what makes them so interesting is that each one is unique and crazy; they really stretched my creative-problem-solving acumen. Freddy must analyze, mix, build, and perform all sorts of gyrations as he moves from puzzle to puzzle, making players work very hard for rewards.

I've deliberately avoided talking about the game as a comedy because, for me, gameplay is the foundation upon which everything else is built. Freddy Pharkas, though, is a comedy, first and foremost. Lowe saw it as an opportunity to pay homage to the rather seedy genre of the Western film, and he took nearly every cliché he could find and warped it to fit this zany world.

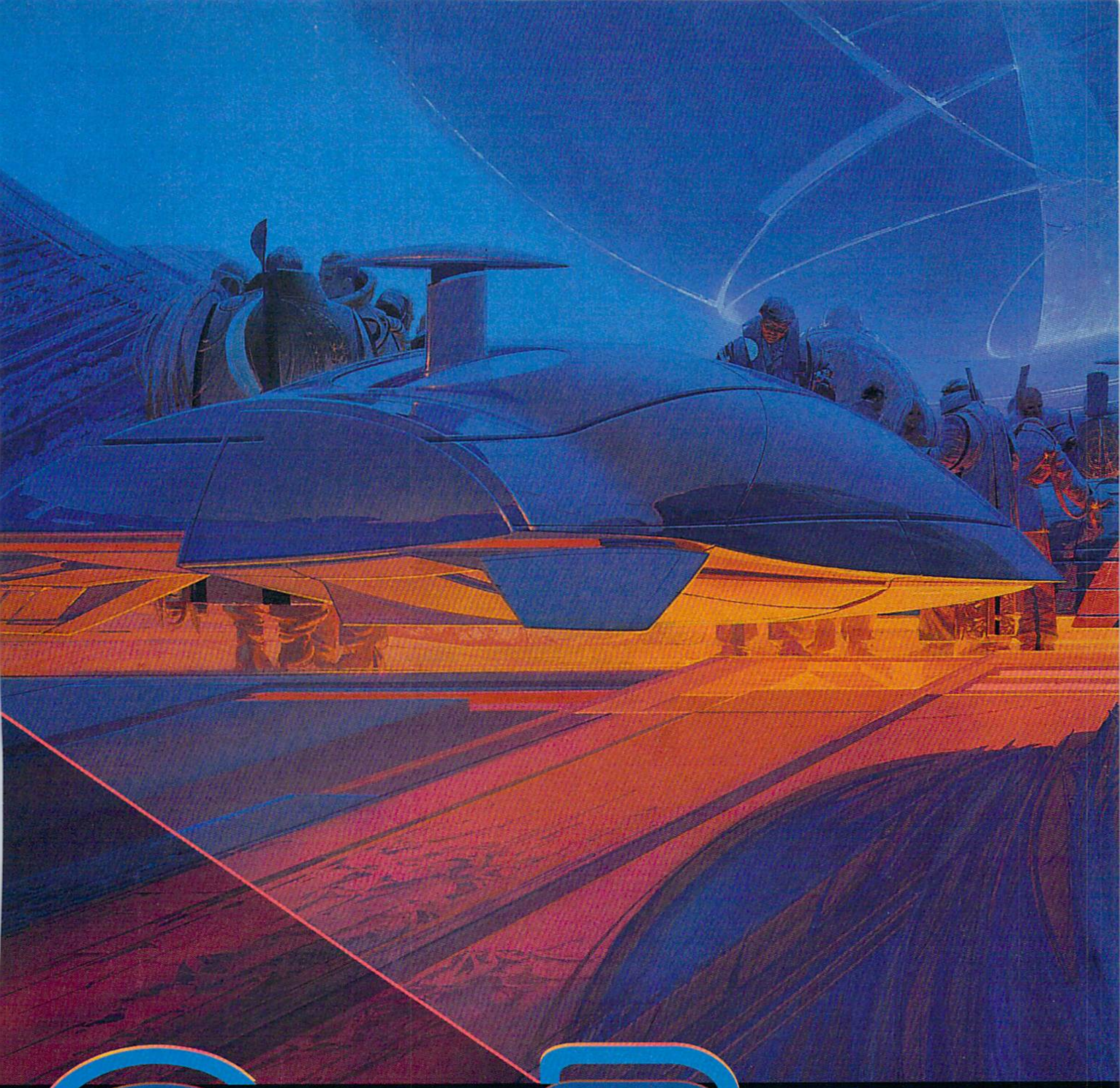
Some characters, like Freddy's faithful Indian sidekick, Srini Bagdnish (the animist from India), play with the stereotypes. Other gags pay homage to certain movies; take, for instance, the scene between Srini and Freddy, which is reminiscent of the scene in *Cat Ballou* in which Jane Fonda helps Lee Marvin dress for a gunfight.

Lowe worked long and hard on the story line for Freddy Pharkas, attempting to create the richest and most believable tale possible for his sense of humor. He even took a workshop in plot and story development from Roger McKee to help with his story. Then he turned to Mandel for his magic pen. Mandel wrote the text of the gags and dialogue, and he created a wonderfully absurd handbook, *The Modern-Day Book of Health and Hygiene: 1881 Edition,* which comes with the game.

When I asked Lowe what difficulties he encountered when working on Freddy Pharkas, he was silent for a moment. Then he shrugged (over the phone) and said, "Actually, I'm getting pretty good at this." You'll agree with him when you play the game.

He's very appreciative to all those who've helped him create the game, especially Clint Eastwood, whose movie *Unforgiven* is one of Lowe's favorites. And Lowe says that he certainly appreciates Clint's winning an Oscar just to promote Freddy Pharkas.

Freddy Pharkas breaks new ground and refines Lowe's comic storytelling ability. But most important, it's extremely challenging and entertaining. Like any good B Western that comes with a tub of popcorn, Freddy Pharkas, Frontier Pharmacist is well worth the price of admission. Indeed, taking a romp on the range with this Wild West pharmacist is time well spent. ❐



CYBERRACE™

CYBERDREAMS™
ENTERTAINMENT SOFTWARE

Circle Reader Service Number 144

CYBERRACE - A REVOLUTIONARY 3D COMBAT AND RACING SIMULATION DESIGNED BY WORLD-FAMOUS FUTURIST SYD MEAD, WHOSE DESIGN CREDITS INCLUDE *BLADE RUNNER, TRON, 2010,* AND *STAR TREK: THE MOTION PICTURE.*

Available for the IBM PC and Compatibles (August 1993), Commodore Amiga (March 1994) and Apple Macintosh (March 1994).
For further information please contact: North America (818) 348-3711 • Europe (071) 328-3267 (U.K.)

Cyberdreams and CyberRace are trademarks of Cyberdreams, Inc. ©1993 Cyberdreams, Inc. Illustration ©1992 Oblagon, Inc. ALL RIGHTS RESERVED

THE GREENING

Building a virtual golf course that feels like the real thing is all work— and all play.

By Richard O. Mann
and
Ramona R. Mann

Illustration by
Richard Hawks

In a darkened office, surrounded by The Eagles' *Greatest Hits* from the CD player, Bruce Carver, president of Access Software, does trees. He spends as much time on trees as he can, without totally ignoring other minor duties such as determining the direction of the company, deciding whether to license its products to Microsoft, and tending to other pesky details. No one digitizes images as well as Bruce Carver. And few probably enjoy it as much, either.

We're thankful for his talent and dedication. The results, seen in Access Software's series of add-on golf courses for the company's line of golf games, are best-selling, ultrarealistic renditions of famous courses around the world. Banff Springs, a recent release, is on the software bestseller lists at press time. By the time you read this, Tarpon Springs, a Florida course, will probably be the latest success.

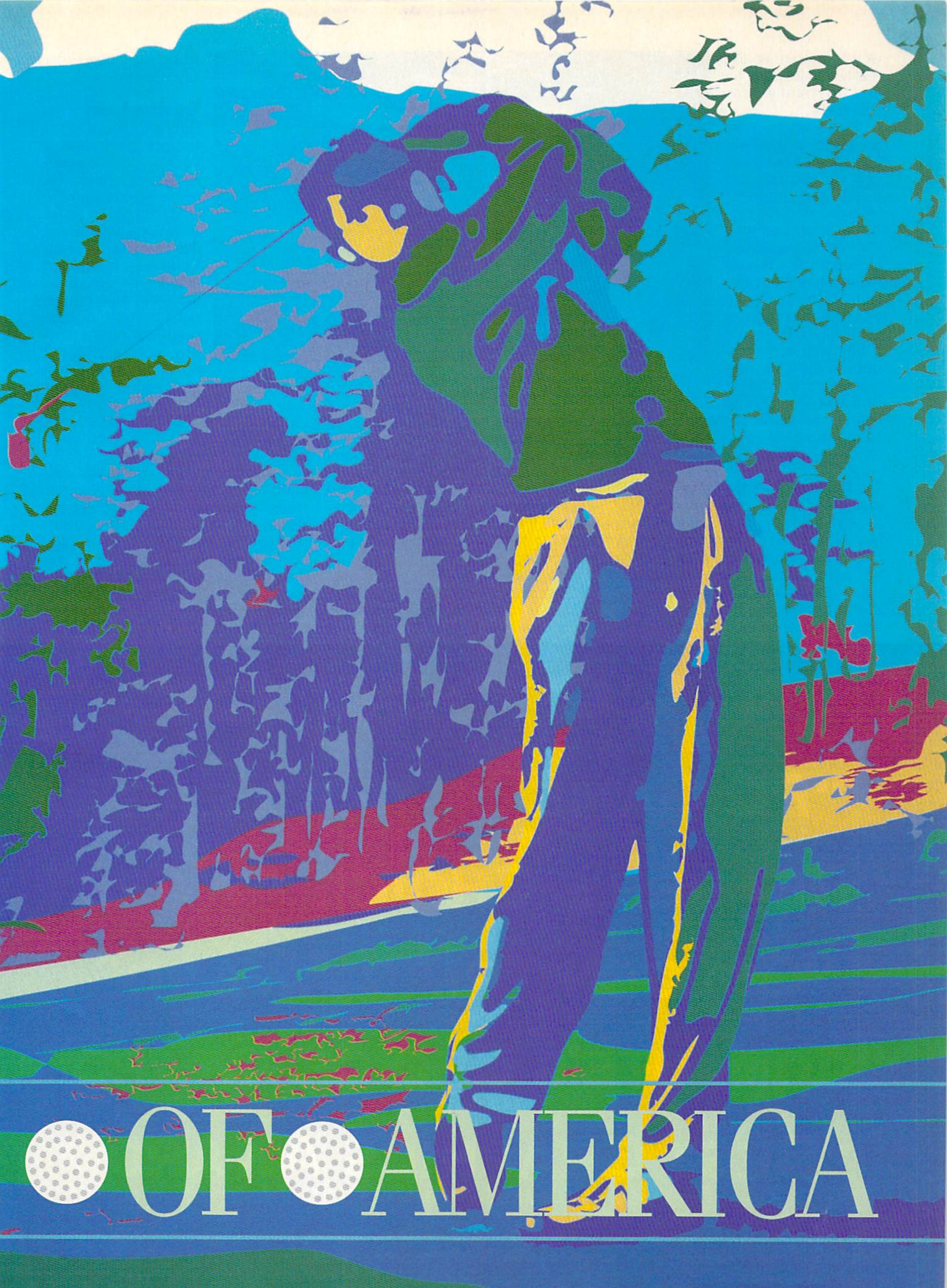
Anyone with a PC and an interest in golf—and certainly any faithful COMPUTE reader—knows about Links 386 Pro and its junior partners, Links and Microsoft Golf (Links for Windows). These games perennially win the Software Publishers' Association's Best of the Year Awards, COMPUTE Choice Awards, and countless other prizes. The games' success lies in the seamless marriage of an unmatched golf game engine with actual golf courses lovingly and meticulously digitized to provide an almost real sense of the course as you play.

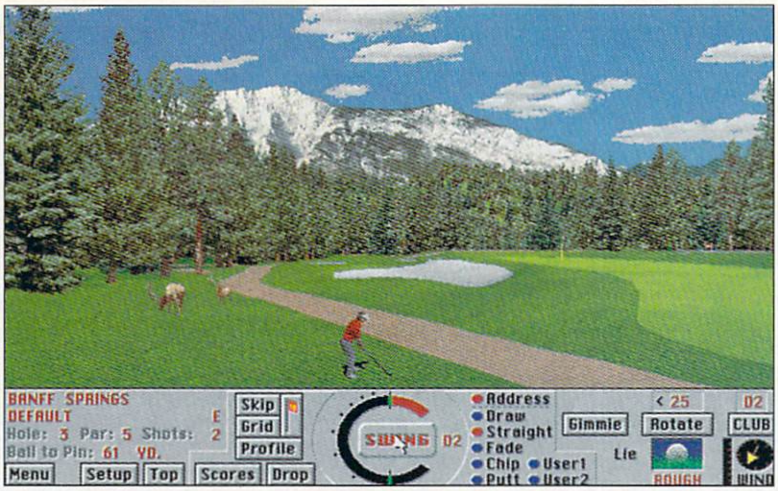
All three games use the same course disks, but the courses are most spectacular in Links 386 Pro's 256-color Super VGA mode. That game's basic interface provides all the information you could possibly want, from scrollable, zoomable aerial views and reverse views from the green to an incredible array of statistics on your play. Balls behave precisely as they would on a real course, rolling down hills, bouncing off paved golf cart paths, and careening wildly if you should be unfortunate enough to hit a ball washer. We don't know what happens when you hit an alligator with a hard two-iron shot, but we'll find out as soon as the Tarpon Springs course ships. (The alligator will be on the course in the exact spot it was the day the design team shot the video used to create the course disks.)

It's Magic

As important as the game's basic play engine is, the golf courses themselves provide ever-fresh excitement to the game. The stunning beauty and realism of these courses never cease to amaze us, even now that we know how they're created. Access routinely receives calls and letters from golfers who have played the actual courses and are astonished at how much the computer version simulates reality.

These courses duplicate the real thing, down to the placement of each tree and bush, ball washer, bench, boulder, and yes, even alligator. These are magical


OF AMERICA



In Banff Springs, where the deer and the antelope play, realism is the effect Access programmers strive for.

worlds that are so like reality that it's easy for you to totally lose yourself.

What's even more amazing is that Access pumps out these enchant-ing courses every few months. How can Access produce such realistic courses so quickly? How can it convert miles of verdant terrain into such an accurate computer simulation? We spent a day with the members of the Links design team at Access in Salt Lake City to find out what sort of magic they use to accomplish these seemingly impossible tasks.

The Magicians Take the Stage

It all starts with course selection. The folks on the Links course design team are avid golfers who study golfing books and magazines when they're not actually out on the links. They watch for famous courses with outstanding features, such as picturesque settings or particularly interesting or challenging hole layouts.

Once the team obtains the rights to use a course, it swings into action. John Berven, who shoulders the overall responsibility for the project, and Zeke McCabe, a professional photographer, travel to the site and play a round to familiarize themselves with the course. If it doesn't rain, the next few days are spent taking videos and still photos of the course. "Golf course managers call us whenever things get too dry—it always rains for four days when we show up," says Berven.

The Show Begins

Berven straps on a battery pack and a special video camera and then walks the entire course with the tape running. He walks down the middle of each fairway, pausing frequently to make a 360-degree turn for the tape. He also makes sure he gets a thorough set of shots of any special objects noted during the previous round of golf. Unusual trees or shrubbery, buildings near the course, animals, boulders, and so forth—all of these need to be specially shot.

Meanwhile, McCabe takes still photos of trees and other objects. Trees, we learned, make or break the visual portrayal of a golf course. McCabe works diligently to identify 50–60 trees that exemplify all the generic trees on the course. He also shoots all the small identifying features of the course, such as the flags on the flagsticks, so that every detail

LINKS 386 PRO

"PC GAME OF THE YEAR"
—GAME PLAYER MAGAZINE

"READER'S CHOICE AWARD"
—MULTIMEDIA WORLD

"GOLDEN TRIAD AWARD"
—COMPUTER GAME REVIEW

"COMPUTE'S CHOICE AWARD"
—COMPUTE

"BEST GRAPHICS AWARD"
—VIDEO GAMES AND COMPUTER ENTERTAINMENT

IF YOU DON'T HAVE LINKS 386 PRO YET, YOU OWE IT TO YOURSELF TO PUT THIS MAGAZINE DOWN RIGHT NOW AND GO OUT AND BUY IT AT YOUR LOCAL SOFTWARE RETAILER!

will show up in the game.

Finding and shooting all the objects can be a challenge. It was at Tarpon Springs that McCabe decided to photograph a six-foot alligator that was sunning itself just off the fairway. As Berven tells it, McCabe nervously crept closer and closer to the gator, snapping shot after shot. Finally, about ten feet from the gator, he was satisfied that he had enough good shots. He relaxed and turned to walk back to the golf cart. As he did, the gator slipped back into the swamp with a loud smack of its tail on the water. "Zeke jumped ten feet when he heard that. He thought the gator was after him," says Berven, chortling.

The next day, McCabe strapped himself into a rented helicopter so that he could hang out the door and take 35-mm photos with his fast-winding Nikon F-4. The chopper flew down each fairway sideways, with the door McCabe was hanging from tilted to let him shoot the photos directly down, without any obstructions. When developed, these stills were taped together to give a four-foot strip photo of the hole from above.

The pair also obtains a topographical map of the course. If none is readily available, they have professionals create one.

Creating Illusions

Back in Salt Lake City, digitizing begins in earnest. Technicians scan the topographical map into a special course architecture program developed for this purpose. It reads the information into a course database, capturing essential information about every square foot of the course's terrain: elevation, nature (fairway, green, rough, sand), slope, and so forth.

From there the course goes to the smoothers, a half-dozen experts who compare the computer's rendition of the course from the topographical map with the videotape and aerial photos. Using the architecture program, they can do virtually anything to the terrain, from smoothing the curves of the edge of the fairway to creating hills or holes anywhere. Primarily, they convert the somewhat roughly mapped information into smoothly flowing terrain that matches the image on the videotape. Splitting up the course among the staff of smoothers makes it possible for them to finish this painstaking, inch-by-inch work in five or six weeks. At the conclusion of smoothing, Berven polishes the transition between holes, making sure everything matches up seamlessly.

The Magic Is in the Art

While the smoothing is in process, some other things are happening. McCabe's shots of trees and objects go to the best Kodak Photo CD lab he can find; there they're converted to CD-based images. With those CDs in hand, Bruce Carver starts his month's work of perfecting each image.

Photos, of course, have an unlimited range of colors. To convert them for SVGA, Carver has to refine each image to a palette of only 256 colors. Building the palette that gives the best results is the key to Carver's arcane art. He is meticulous, working pixel by pixel till the images approach perfection.

Outside the president's office, the word is that courses are often held up for weeks while Carver refines that last pixel. In his office, Carver says with a gentle grin, "I have to hustle to keep from holding things up."

Planting the Illusions

Once Carver is satisfied, the object files go to Berven, who "plants" the trees and other objects. With the object files at the ready, Berven works with his overhead photo strip to precisely place each tree and other object in its proper place on the terrain. He can place a tree within one square foot

—SOLID GOLD!!

"SPA AWARD"
BEST SPORTS
PROGRAM 1993
—SOFTWARE PUBLISHERS ASSOCIATION

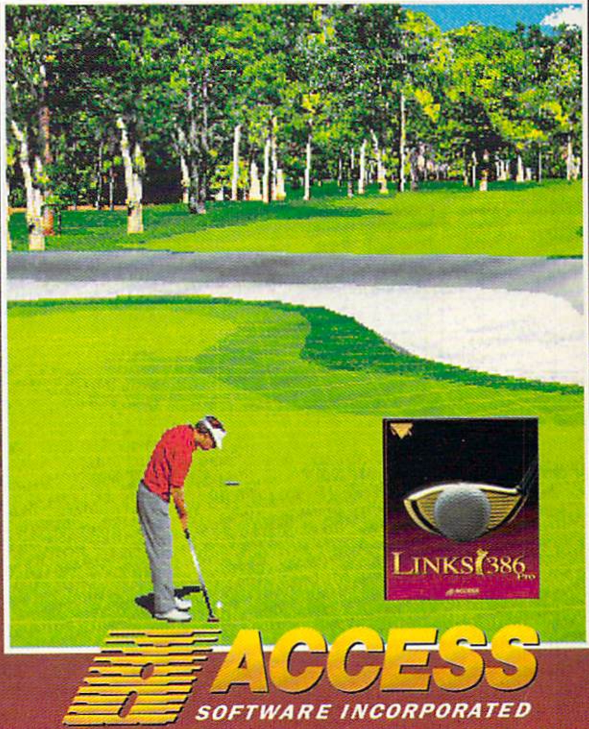
"THE BEST GOLF GAME
ON THE PLANET!"
—PC HOME JOURNAL

"#1 SELLING
ENTERTAINMENT
PRODUCT IN AMERICA."
—PC RESEARCH (OCT.'92)

IF YOU CAN'T FIND LINKS 386 PRO NEAR YOU, CALL
1-800-800-4880 FOR QUESTIONS OR ORDERING .

ACCESS
SOFTWARE INCORPORATED
4910 W. Amelia Earhart Dr., SLC, UT 84116

Circle Reader Service Number 169



of its actual location and plot terrain within two inches of its actual elevation. He places each unusual tree and object in its appropriate square foot, then works with the representative generic trees and shrubs, sizing them according to the videotape's image and planting them where the overhead photos show them.

After completing this process, Berven plays the computer course, comparing each hole to the videotape as he goes. "Even though we've placed each tree, sand trap, and other feature in exactly the right place, sometimes they simply don't feel right. In real life, things occasionally look different than they really are, so we have to tweak things to achieve the real look and feel, even though it results in a tree being slightly out of place or a hill being higher than it really is," he says.

Then the course goes into intensive play testing. Many minor problems show up at this stage, mostly in the smaller details. The team continues to refine the course until Berven is satisfied that the course seems exactly the same as the course he's played and videotaped. Around 2-1/2 months have passed from playing the opening round to sending the product to manufacturing.

The course design and production teams have this process down to a science. They've created a dozen courses so far and routinely produce new ones approximately every two months. As they work, however, they come up with new refinements in the technology. In fact, almost every course has shipped with a new version of the core game program with minor changes, adding features needed for the new course.

A Real Fantasy Course

Perhaps you've seen calendars or posters featuring the most difficult golf holes in the world. One pictures the green on a tiny ledge halfway down the cliff at Niagara Falls; others are similarly outrageous. The Access golf geniuses couldn't resist the challenge to create their own fantasy course.

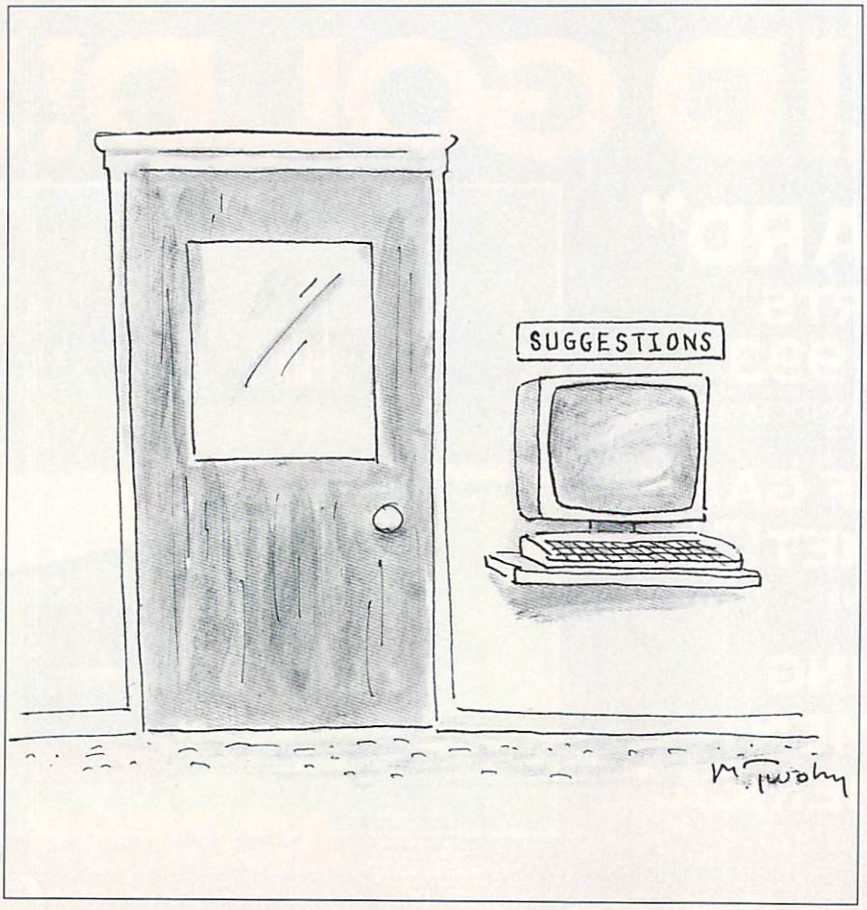
But Links courses are real, based on actual terrain. They must allow you to actually play the course. For a setting for his make-believe course, Berven went to the U.S. Geological Survey map repository to search for the ideal topography. He selected an area near Kings Peak in the rugged High Uinta mountain range in Utah.

The course is well under way; we saw fairways in the bottoms of canyons, tees on cliffs, and greens a hundred feet above the fairway. This is going to be a wild golf course—but rest assured, it's almost real. If you could get the land rights, you could build this course up there in those rugged mountains.

The fantasy course will be released as part of a promotional tie-in with Access's upcoming state-of-the-art interactive movie game, Under a Killing Moon, a two-CD thriller due in the first quarter of 1994.

Devotion and Passion Make the Magic

You don't often encounter executives spending their time digitizing trees in darkened rooms. Bruce Carver's passion for his work is evident, as he eagerly explains the intricacies of trees, 256-color palettes, and searching for the best Photo CD lab. Here is a man who pushes the limits of technology and human effort in order to achieve the highest quality possible. The result is a seamless, magical illusion which so closely simulates reality that you have to remind yourself you're sitting in a chair at your house and not in some faraway place chipping away out on the links. ❑



SPEAK UP!

Is there a feature topic you'd like to see covered in COMPUTE? Let us know by calling **(900) 884-8681, extension 7010101**. The call will cost 95 cents per minute, you must be 18 or older, and you must use a touch-tone phone. Sponsored by Pure Entertainment, P.O. Box 186, Hollywood, California 90078.

64/128 VIEW

Here are a couple of new products from two companies that still have faith in the Commodore market.

Tom Netsel

Peter Fiset, the man behind Performance Peripherals, makes a number of great products for the 64 and 128. Check out any CMD advertisement and you're sure to notice RAMLink and RAMDrive, just two of his creations.

GEOS and REU users are probably familiar with two of Fiset's other Commodore peripherals: BBGRAM and BBU. BBGRAM is a battery-backed RAM for GEOS 2.0 that is a fast alternative to mechanical drives. BBU is a battery backup cartridge for the 64 or 128 that provides permanent memory (nonvolatile) for Commodore RAM expansion units.

Many companies have dropped Commodore products from their inventory, but Fiset keeps making new ones. Continuing with his alphabetical names, Fiset now offers BBRTC, a new and novel realtime clock.

While he doesn't say so, I assume BBRTC means battery-backed realtime clock. In any event, this module plugs into the unused joystick port for non-GEOS applications. Software that comes with the module executes automatically whenever GEOS is booted. This sets the GEOS time and date. Users can program BBRTC to any date and time, and leap years are calculated automatically.

BBRTC works with or without an REU, and it can be used with GEOS 1.3 and up, including GEOS 128 2.0. It comes with a number of utilities that are written in BASIC. BBRTC sells for $19.95 plus $3.00 shipping and handling to U.S. destinations, $4.00 for those in Canada, and $6.00 elsewhere. For more information or to order, contact Performance Peripherals, 5 Upper Loudon Road, Loudonville, New York 12211; (518) 436-0485. To place an order from the U.S., call (800) 925-9774.

In other news, Mad Man Software has started to ship its Compression Kit. This is a disk and file backup system that features fast data compression for the 64.

According to Gene Barker, the Mad Man himself, Compression Kit works with all Commodore computers and drives. Designed for the 64, the kit works with both North American NTSC and European PAL versions. It's also configured to work with JiffyDOS, all of the CMD hard drives and floppy drives, RAMLink, and RAMDrive. This menu-driven utility lets you copy, move, and delete standard files, as well as copy and compress partitions and entire disks.

For a number of years, Mad Man has been working on its multidisk adventure game, Messiah III. Compression Kit grew out of the company's need to provide a reliable backup and verify utility that worked with all of the staff computers and drives. As it turned out, this utility worked so well that Barker decided to market it. Compression Kit sounds like a great utility for power users or sysops who run a multidrive BBS.

Compression Kit retails for $39.95. It can be ordered from Mad Man Software, 1400 East College Drive, Cheyenne, Wyoming 82007 or by calling (800) 34-MADMAN. For more information call (307) 632-1178. ❐

GAZETTE

64/128 VIEW G-1
Support for the 64 continues.
By Tom Netsel.

THE SOUNDS OF SID G-2
Programming the SID chip.
By Larry Cotton.

REVIEWS G-8
FD-Series Drive and Simple Sounds.

FEEDBACK G-12
Questions, answers, and comments.

PD PICKS G-14
Super Rockfall and Zix.
By Steve Vander Ark.

BEGINNER BASIC G-16
Retrieving data from disk.
By Larry Cotton.

MACHINE LANGUAGE G-18
Watch this line crawl across your screen at ML speed.
By Jim Butterfield.

PROGRAMMER'S PAGE G-20
A reader helps solve printer problems.
By Randy Thompson.

GEOS G-22
A GEOS user's guide to GEnie.
By Steve Vander Ark.

D'IVERSIONS G-24
Are schools ready for our children?
By Fred D'Ignazio.

PROGRAMS
Super Screen Fonts (128) G-25
Script Fix (128) G-30
Double Size (128) G-30
VertiScroll (64) G-31
Easy Does It (64) G-35
RAM-D (64) G-38
How to Type In Gazette Programs (64/128) G-40

87

The Sound Interface device has three voices that enable your 64 or 128 to play music, initate musical instruments, talk, and make sounds. Here's how to tap into that power.

THE SOUNDS OF SID

If you've used your 64 for any length of time, you probably know what great sound capabilities it has. Each 64 has three voices, or tone oscillators, and each of these voices has four waveforms: triangle, sawtooth, pulse, and noise. All three voices must share the same volume control, but each voice can produce sound independently of the others. The Sound Interface Device, an integrated circuit chip known as SID, resides inside both the 64 and 128 computers. It has the ability to let your computer play music, imitate musical instruments, talk, and make any number of sounds to accompany games. To produce a single sound on the SID chip, it's necessary to issue a few commands in a precise order. SID occupies memory registers 54272 through 54300 in the 64. To produce sounds, we poke different values to several of these registers. Here's a review of the order in which you must issue commands to cause SID to produce a sound.

1. Clear the chip
2. Turn up the volume
3. Wait
4. Set a frequency
5. Set an envelope
6. Turn on a waveform

Of course, this procedure plays only a single note on one SID voice. By changing frequencies, you can play a simple melody. Many songs for the 64, however, include a melody, a harmonic line, and some percussion. This requires that all three SID voices be programmed more or less independently. Beautifully elaborate songs are usually programmed in machine

By Larry Cotton

language, but simpler tunes can easily be programmed in BASIC. Before we go any further, however, we must understand the concept of bit manipulation.

Figure 1

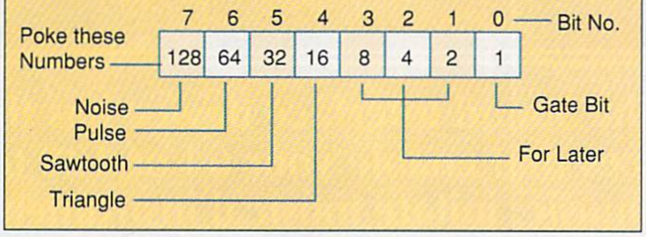
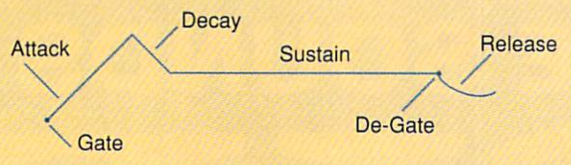


Figure 2

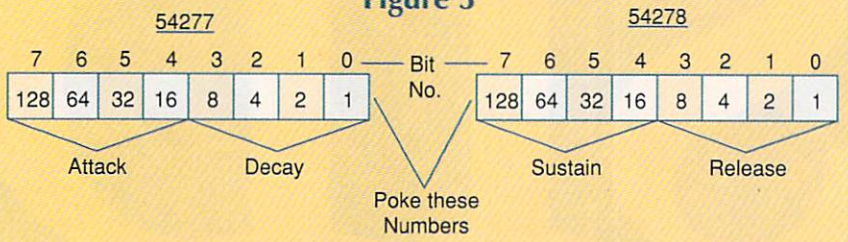


Bit Manipulation

The 64 and 128 are both 8-bit computers. That means that each of their myriad of memory registers holds one byte, or eight individually controllable bits. When you turn on or turn off a voice, you're actually gating and degating a memory register. To gate a voice-control memory register, you simply change one bit—the first one—in that register. See figure 1 for a representation of one particular register, 54276, which is the control register for voice 1.

In figure 1, the rightmost bit—bit 0—must be set, or changed, from a 0 to a 1 to make the voice speak. Do this by poking a 1 to the memory register 54276.

Figure 3



However, in addition to setting the 0 bit, you must also select one of the four waveforms. This requires setting another bit to 1. As you can see in figure 1, each of the four leftmost bits (4 through 7) represents a waveform.

To select a waveform, pulse, for example, you set bit 6 to a 1. Bit 6 is controlled by poking a 64. Add 1 to gate the register and then poke the result to that register. Thus, a poke of 65 to 54276 turns on voice 1's pulse waveform. Poke 33 to turn on or gate the sawtooth waveform, 17 to turn on the triangle waveform, and 129 to turn on noise.

The pulse wave is unique. To hear it, you must poke some value to at least one of its two pulse-width registers. For each voice, there are coarse and fine pulse-width registers.

For now, we'll just poke 8 to the coarse pulse-width registers 54279 and 54286 for voices 1 and 2, respectively. The other waveforms don't need this poke.

OK, the voice is on. There are several ways to make the voice shut up. The easiest way is to make bit 0 a 0 again. We've seen that if waveform 65 gates the register to make it play, poking a 64 degates or turns it off. Likewise, poking a 129 turns on the noise waveform, while 128 turns it off.

There are at least three other ways to silence a voice. You can change the voice's envelope to a shorter sustain and/or decay value; you can poke a 0 to the voice's frequency registers; or you can poke a 0 to 54296, the master volume control.

Here's a snippet of a program featuring two sustained voices, accompanied by percussion, that demonstrates some of the techniques just described. Take a look at the Three Voices listing and follow the line-by-line explanation that follows.

Line 10 defines S as the first of SID's 29 memory registers. It then clears the chip by poking all the registers with 0. Lines 20 and 30 turn up the volume and initiate a short pause.

In lines 40 and 50, attack and decay for voice 3 (the drum) are set differently from attack and decay for voices 1 and 2 (melody and harmony). Likewise, sustain and release are set differently in lines 60 and 70. Line 80 sets up the pulse wave width for the first two voices.

We read data for the melodic frequencies in line 100, while the drum's frequency remains constant at 50 (line 90). In lines 110 and 120, we poke both fine and coarse frequencies to the register.

Now let's use bit manipulation to turn on voices 1 and 2 with a pulse wave. We set bits 6 and 1 by poking a 65 (64 + 1) to 54276 (S+4) and 54283 (S+11) in line 130. While the notes play, a FOR-NEXT loop in lines 140–180 plays four drumbeats. Line

Three Voices

```
ED 10  S=54272:FORJ=STOS+24:POK
       EJ,0:NEXT:REM CLEAR SID
       {SPACE}CHIP
DP 20  POKES+24,15:REM VOLUME A
       LL 3 VOICES
AJ 30  FORT=1TO500:NEXT:REM WAI
       T
JF 40  POKES+5,12:POKES+12,12:R
       EM ATTACK AND DECAY VOIC
       ES 1 AND 2
FA 50  POKES+19,2:REM AD DRUM
BM 60  POKES+6,4:POKES+13,4:REM
        SUSTAIN AND RELEASE VOI
       CES 1 AND 2
XK 70  POKES+20,15:REM SR DRUM
QS 80  POKES+3,8:POKES+10,8:REM
        SET UP PULSE WAVE AS SQ
       UARE WAVE VOICES 1 AND 2
HA 90  POKES+15,50:REM COARSE F
       REQ VOICE 3 (DRUM)--FINE
        FREQ. NOT NECESSARY
FP 100 READA1,A2,B1,B2:REM REA
       D FREQUENCIES FOR VOICE
       S 1 (A1, A2) AND 2 (B1,
        B2)
GK 110 IFA1=0THENEND
SE 120 POKES+1,A1:POKES+8,B1:R
       EM COARSE FREQUENCIES V
       OICES 1 AND 2
XD 130 POKES,A2:POKES+7,B2:REM
        FINE FREQUENCIES VOICE
       S 1 AND 2
PH 140 POKES+4,65:POKES+11,65:
       REM TURN ON VOICES 1 AN
       D 2 (PULSE WAVE)
BG 150 FORZ=1TO4:REM NO. OF DR
       UM BEATS
EQ 160 POKES+18,129:REM TURN O
       N VOICE 3 (DRUM)
CG 170 FORT=1TO200:NEXT:REM LE
       NGTH OF DRUM BEAT
HS 180 POKES+18,128:REM TURN O
       FF VOICE 3
GR 190 NEXT
FD 200 POKES+4,64:POKES+11,64:
       REM TURN OFF VOICES 1 A
       ND 2
MD 210 GOTO90
XD 220 DATA16,195,21,31,15,210
       ,25,30,14,24,16,195,0,0
       ,0,0
```

The GRAPEVINE GROUP INC.

OUR 13TH YEAR

• NORTH AMERICA'S LARGEST SUPPLIER OF AMIGA CUSTOM CHIPS AND SPECIALTY PARTS •

COMMODORE FACTORY SURPLUS

Recently, Commodore elected to consolidate their stateside operations, thus making them financially stronger. One of the first steps taken was to reduce their inventory in both the U.S. and Canada. In doing this, select distributors were given the opportunity to purchase sizable amounts of new and factory refurbished parts at extraordinarily low prices. This section contains new and refurbished *items, which are indicated by the letters "N" or "R" to the left of each product. Refurbished does not mean used or pre-owned, but simply factory remanufactured. Some units may have minor imperfections such as scratches or, in the case of some monitors, faulty front doors. With the exception of a minor imperfection, if any, most everything appears "mint" and of course everything carries a full 90 day warranty. This is your opportunity to purchase Amiga/Commodore parts and equipment at up to 80% less than an authorized dealer pays.*

MONITORS

R	**1084S** composite/RGB high resolution color monitor with cables. This is the latest composite video/RGB monitor Commodore manufactured	**$129.95**
R	**1802** composite video high resolution color monitor with cables. Production monitor prior to 1084 series. Works on 64/128 series and Amiga. Also an excellent VCR or Toaster monitor	**$99.95**
R	**1702** composite video color monitor with cables	**$84.50**
R	**1403** composite high resolution monochrome video with cable	**$65.00**
R	**1930** Bisync high resolution VGA color monitor. This companion to Commodore's PC series works with IBM/IBM compatibles	**$99.95**
R	**1950** 14" multisync high resolution VGA color monitor with automatic scanning. Works with A600/1200/3000/4000 and IBM/IBM compatibles (Predecessor to the 1942)	**$249.95**
R	**A520** RF modulator. Allows you to connect an Amiga (A500/2000/3000) to a TV or composite video monitor. The A520 converts the RGB video signal into composite color video	**$22.50**
R	**A2300** Genlock Board (A2000/3000)	**$64.50**

COMPUTER SYSTEMS

N	**Amiga 500** with power supply and software (late revision)	**$169.95**
	With STARTER PACK software add	**$10.00**
N	**Commodore C64C** with power supply (latest design and revision)	**$89.95**
R	**Commodore C64** with power supply	**$69.95**
N	**Commodore C65** This is a new C64 just released in Europe with a built in 3½" floppy drive on the front (PAL or NTSC)	**$95.50**
R	**PC10III (XT)** No hard drive	**$149.95**
R	**PC20III (XT)** 20 meg hard drive	**$169.00**
R	**PC30III (AT-286)** 20 meg hard drive	**$229.00**
R	**PC40III (AT-286)** 40 meg hard drive	**$299.95**

ADDITIONAL OPTIONS

Amiga 1930 VGA Bisync color monitor with any of the "PC Series" computer add	**$79.95**
Commodore 1084S with any "PC Series" computer add	**$89.95**

SPECIAL PRICE PACKAGES

BONUS PACKAGE A:
Commodore C64 with 1541 floppy drive and 1084S (stereo) high resolution color monitor. Includes power supply and cables **$229.95**

BONUS PACKAGE B:
Commodore C64C (latest version made) with 1571 high density floppy drive and 1084S color monitor. Includes power supply and cables **$299.95**

BONUS PACKAGE C:
Amiga A500 computer with Software Starter Kit and 1084S (stereo) high resolution color monitor. Includes power supply and cables (List price of package $449.00) Our price **$284.95**

MISCELLANEOUS

N	**A10** Commodore computer speakers with built in amplifier	**$19.95**
N	**MPS1230** Commodore printer (same as Citizen 120) tractor/friction	**$59.95**
R	**A2300** Genlock Board (A2000/A3000)	**$64.50**
N	**Amiga 8375 Agnus Chip** (390544-01 UK/Europe PAl type)	**$24.95**
N	**3½ (880K) Commodore diskette** with various software that can be erased. This is a new disk available at a low price.	
	Package of 10	**$3.80**
	Package of 50	**$18.00**
N	**Just Released 2.1 Series Diskettes** (same software as 2.1 kit)	
	2.1 install disk	**$3.95**
	2.1 fonts disk	**$3.95**
	2.1 locale disk	**$3.95**
	2.1 extra disk	**$3.95**

*NOT A COMMODORE PRODUCT.

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

MOTHERBOARDS

N	**A500** (rev. 3) Complete with all chips including ½ meg Agnus	**$89.95**
N	**A500** (revision 5 and up) Includes 8372 1 meg Agnus & 1.3 ROM	**$129.95**
R	**A2000** Includes 8372A Agnus & new 2.04 Operating ROM (great for tower units)	**$299.95**
R	**A3000** (various revisions)	**CALL**
N	**MPS 803** printer motherboard	**$16.50**
N	**VGA 286** laptop motherboard	**$179.95**
N	**1571** control motherboard	**$54.95**
R	**C64** motherboard (1984-5 version)	**$29.95**
N	**C128** motherboard (with new ROMs)	**$99.00**
N	**C128D** motherboard (with new ROMs)	**$110.00**
N	**C64C** motherboard (revision E)	**$54.50**
N	**PC40 III** motherboard	**$140.00**
N	**PC30/40/60 III**	**CALL**
N	**1750/64** RAM expansion board	**$19.50**
N	**Slingshot Pro:*** Gives A2000 slot for your A500. New design with passthrough. Now take advantage of all A2000 plug in boards	**$42.50**

KEYBOARDS

N	**A500** (American version)	**$27.50**
R	**A500** (U.K. version)	**$22.00**
N	**A600/1200**	**$29.50**
R	**A1000**	**$54.50**
N	**A2000**	**$49.50**
R	**A3000**	**$49.95**
N	**C64**	**$17.95**
R	**C128D**	**$25.95**
N	**PC Series**	**$49.95**
N	**Encoder Board** (Mitsumi) (A500/2000)	**$19.00**

POWER SUPPLIES

N	**A500** (110V)	**$29.95**
R	**A500** (240V U.K. & Europe)	**$24.50**
N	**A500 Big Foot*** (A500/600/1200)	**$79.95**
N	**A2000** (110/220V)	**$89.95**
N	**A2000** Big Foot* (300 watts)	**$135.00**
N	**A3000**	**$84.95**
R	**A3000** (220V)	**$79.95**
N	**C64** (sealed/nonrepairable) 1.5 amp	**$9.95**
N	**C64** (repairable)* 1.8 amp	**$24.95**
N	**C64** 4.3 amp heavy duty (also used with 1750 RAM expander)	**$29.95**
N	**C1541 II/1581** (external) Limited quantity. Going fast.	**$19.95**
	220 Volt version available for	**$27.50**
N	**C128D** (internal)	**$12.95**
N	**C128** external 4.3 amp	**$29.95**
N	**PC20** (75 watt)	**$83.5**
N	**1680** power supply for A1200RS modem	**$11.95**

DRIVES

N	**A500** internal 880 K drive: Exact drop-in replacement	**$59.95**
R	**A590** hard drive (20 megs) with controller & power supply	**$169.95**
	With extra 2 megs installed add	**$74.00**
R	**A1010** Amiga external 3½" floppy (predecessor to A1011)	**$49.95**
R	**A1011** Amiga external 3½" floppy	**$54.95**
N	**A2000** high density drive (1.76 megs)	**$91.50**
R	**A2000** internal drive	**$79.95**
N	**2090A** hard drive controller (no memory)	**$17.95**
N	**2091** hard drive controller (new ROMs)	**$64.50**
R	**A3070** 150 meg tape backup (complete)	**$229.95**
R	**1541** complete floppy drive with cable	**$64.95**
R	**1541** replacement control board only	**$30.00**
N	**A1541-II** complete stand alone floppy drive	**$90.50**
N	**1571** complete stand alone floppy drive (Selling out fast)	**$119.95**
N	**A1571** replacement control board only	**$55.00**
N	**IBM/Commodore bridgeboard floppy** (5¼/1.2 megs)	**$25.50**
N	**Printer Port Adapter.*** Interface any Commodore printer to work any PC/PC clone	**$29.95**
N	**CD ROM drive assembly** for CDTV (complete)	**$129.95**

Dealers: Send us your letterhead and we will send you our Fall '93 dealer prices.

Order Line Only
1-800-292-7445

3 Chestnut Street, Suffern, New York 10901 • Fax: (914) 357-6243
Order Status/Customer Service Line: (914) 368-4242 / (914) 357-2607
International Order Line: (914) 357-2424 9-6 E.T. MON.-FRI.

SEND SASE FOR FULL LISTING OF ALL COMMODORE/AMIGA SURPLUS PRODUCTS

Circle Reader Service Number 110

150 turns on the noise waveform—the drumbeat—by poking a 129 (128 + 1) to voice 3's control register; line 170 degates it. Line 180 ends the drumbeat's FOR-NEXT loop.

Line 190 degates voices 1 and 2 by resetting bit 0 to 0, and then line 200 sends control back to read more note frequencies.

More on Envelopes

A note's envelope can be described as the way its volume changes while it plays. Figure 2 shows how a typical envelope could look.

The rate of rise in volume at the left of the curve is called the attack, which starts as soon as the voice is gated. This volume usually rises to a relatively high level and then drops back. This part of the sound's lifetime, called decay, is the rate that the volume of the sound diminishes from this highest level to the sustained level. Sustain is the flat portion of the sound curve.

Finally comes the release portion. Release starts when the voice control register is degated and is the rightmost portion of the curve.

Timing also influences the representative shape of an envelope. Remember, we used FOR-NEXT loops to create pauses while the notes and drumbeats sounded.

Each voice uses two memory registers to control its envelope, which is often referred to as the ADSR envelope. The first register controls attack and decay, and the second controls sustain and release.

How do you know what to poke into the envelope registers? I've found that the most effective way to set up an envelope is by trial and error, listening to the sound. However, it helps to know how the envelope is affected by the setting of each bit. Figure 3 represents the memory registers for attack and decay (54277) and sustain and release (54278) for voice 1.

Figure 4

Attack	Decay
0 (no bits) shortest	0 (no bits) shortest
16 (bit 4)	1 (bit 0)
32 (bit 5)	2 (bit 1)
48 (bits 4 and 5)	3 (bits 0 and 1)
64 (bit 6)	4 (bit 2)
80 (bits 4 and 6)	5 (bits 0 and 2)
96 (bits 5 and 6)	6 (bits 1 and 2)
112 (bits 4, 5, and 6)	7 (bits 0, 1, and 2)
128 (bit 7)	8 (bit 3)
144 (bits 4 and 7)	9 (bits 0 and 3)
160 (bits 5 and 7)	10 (bits 1 and 3)
176 (bits 4, 5, and 7)	11 (bits 0, 1, and 3)
192 (bits 6 and 7)	12 (bits 2 and 3)
208 (bits 4, 6, and 7)	13 (bits 0, 2, and 3)
224 (bits 5, 6, and 7)	14 (bits 1, 2, and 3)
240 (bits 4, 5, 6, and 7) longest	15 (bits 0, 1, 2, and 3) longest

Figure 4 is a chart which can help you decide what to poke to the attack/decay register. The upper four bits, 4–7, control attack, while the lower four, 0–3, control decay. Attack can be gradually lengthened by poking the values shown in increments of 16. Poking 240 sets all four bits, 4–7, for the longest attack time.

Changing decay gradually, however, is a bit easier. Just poke 1–15 for increasingly longer decay times. Sustain and release are controlled in register 54278 for voice 1. Bits 4–7 control sustain, while 0–3 control release.

Of the four parts of an envelope, sustain is the only one that is a volume level, as opposed to a rate of volume change. Therefore, you must set a sustain level before the release can be heard.

Enough theory. Check out the short program called Envelopes that should end your quest for the perfect envelope. As you hear the sounds, watch the values change to show what to poke where to achieve that sound. This is for voice 1 only. For voice 2, add 7 to the memory registers; for voice 3, add 14. As mentioned, voice 1 occupies registers 54272–54278, voice 2 occupies 54279–54285, and voice 3 resides in 54286–54292. ❑

Envelopes

```
AM 10 PRINTCHR$(147)
CC 20 POKE650,128:REM REPEAT A
      NY KEY
RR 30 F1$=CHR$(133):F2$=CHR$(1
      37):F3$=CHR$(134):F4$=CH
      R$(138)
CG 40 F5$=CHR$(135):F6$=CHR$(1
      39):F7$=CHR$(136):F8$=CH
      R$(140)
EF 50 SID=54272:FORJ=SIDTOSID+
      23:POKEJ,0:NEXT:REM CLEA
      R SID
KA 60 POKESID+24,15:REM FULL V
      OLUME
SG 70 V1=6:V=2↑V1+1:REM INITIA
      L VOICE
SG 80 D=5:REM INTIAL DECAY
JB 90 P=30:REM INITIAL PITCH
EK 100 POKESID+3,8:REM PULSE W
       IDTH
HQ 110 PRINT"{HOME}{DOWN} P =
       {SPACE}RANDOM PITCH
JJ 120 PRINT" V = CHANGE VOICE
AG 130 PRINT" ANY KEY = REPEAT
PD 140 PRINT" SPACE BAR = BEGI
       N RELEASE
KB 150 PRINT"{DOWN} ATTACK TIM
       E ={3 SPACES}F1/F2":PRI
       NT" DECAY TIME
       {2 SPACES}={3 SPACES}F3
       /F4"
PE 160 PRINT" SUSTAIN LEVEL =
       {SPACE}F5/F6":PRINT" RE
       LEASE TIME ={2 SPACES}F
       7/F8
BB 170 GETA$:IFA$=""THEN170
FX 180 IFA$=CHR$(32)THENPOKESI
       D+4,V-1:GOTO110:REM SIL
       ENCE SOUND
BE 190 IFA$="V"THENV1=V1+1:IFV
       1=8THENV1=4
GK 200 IFA$=F1$THENA=A+1:IFA>1
       5THENA=15
EM 210 IFA$=F2$THENA=A-1:IFA<0
       THENA=0
PR 220 IFA$=F3$THEND=D+1:IFD>1
       5THEND=15
CR 230 IFA$=F4$THEND=D-1:IFD<0
       THEND=0
JB 240 IFA$=F5$THENS=S+1:IFS>1
       5THENS=15
AF 250 IFA$=F6$THENS=S-1:IFS<0
       THENS=0
MC 260 IFA$=F7$THENR=R+1:IFR>1
       5THENR=15
HA 270 IFA$=F8$THENR=R-1:IFR<0
       THENR=0
MK 280 PRINT"{DOWN} ATTACK
       {4 SPACES}DECAY
       {5 SPACES}SUSTAIN
       {3 SPACES}RELEASE
RS 290 PRINT"{DOWN}"A*16"
       {LEFT} {UP}",
BK 300 PRINT"{DOWN}"D"{LEFT}
       {UP}",
PJ 310 PRINT"{DOWN}"S*16"
       {LEFT} {UP}",
CB 320 PRINT"{DOWN}"R"{LEFT} "
EG 330 PRINT"{DOWN} POKE 54277
       ,"A*16+D"{LEFT} "
AA 340 PRINT"{DOWN} POKE 54278
       ,"S*16+R"{LEFT} "
BC 350 POKESID+5,A*16+D:REM AT
       TACK/DECAY
XD 360 POKESID+6,S*16+R:REM SU
       STAIN/RELEASE
AA 370 POKESID+4,V-1:REM SILEN
       CE SOUND
GF 380 IFA$="P"THENP=INT(40*RN
       D(1))+5:REM RANDOM COAR
       SE PITCH
QB 390 PRINT"{DOWN} POKE 54273
       ,"P"{LEFT} "
PD 400 POKESID+1,P:REM COARSE
       {SPACE}PITCH
XD 410 V=2↑V1+1:POKESID+4,V:RE
       M BEGIN SOUND
XH 420 PRINT"{DOWN} POKE 54276
       ,"V"{LEFT} "
XQ 430 GOTO110
```

SOFTWARE SUPPORT
INTERNATIONAL
We Stock America's Largest Selection Of C-64/C-128

Thousands of Commodore Owners Choose Us
As Their One Stop Supplier . Here's Why!

- **Largest Selection of Commodore Software in the U.S.A.!**
  After six years in business. nobody in the Commodore market is more committed to your Commodore than we are. We have well over 225,000 pieces of hard to get software in stock to service your every need. If you've heard of a product, odds are that we can locate it for you. And, we stock most major Commodore titles that are still in production.
- **Hardware & Peripherals.**
  Although we can't get keyboards and disk drives any longer, we can offer disks, modems, cables, interfaces, and much more.
- **Used Software Selection.**
  Our regular customers know how to stretch their software dollars shopping our Used Software Listings.
- **Un-Advertised Specials.**
  Our regular customers enjoy VIP service and great bargains that are hard to pass up.
- **Expert Technical Support.**
  As a regular Software Support customer, you have access to the most knowledgeable Commodore technical departments in the country. Of this, we're darn proud.
- **Friendly & Courteous Order Takers.**
  You'll have a hard time finding order takers as anxious to help you as Sandy, Mike and Claressa.
- **Fast Order Processing.**
  Thanks to our automated computer system, huge inventory and efficient shipping staff, most orders are processed the same day.
- **Walk In Sales Department.**
  We welcome visitors to our warehouse outlet. The same great deals are available and best of all, no shipping charges.
- **Worldwide Distributor Of Major Products.**
  Ever hear of Maverick, Super Snapshot, Super 1750 Clone, and the 1581 Toolkit? We've been actively involved in the ground up production and world-wide distribution of these and many other fine Commodore products.
- **Purchase From Us With Confidence.**
  We were very pleased when the Better Business Bureau came to us and told us that our outstanding reputation qualified us as members in their organization. We're here to stay, not a fly by night, here today and gone tomorrow outfit.
- **Extensive Catalog.**
  Our contacts at other mail order companies have told us that producing a catalog such as ours is too time consuming and worst of all - too expensive. We say it's the least we can do for our customers, and wouldn't have it any other way. Simply call or write for your free copy.

Out Of This World!
Software Support
SUMMER
1993
CATALOG
LIQUIDATIONS
CLOSE-OUTS
BARGAINS
on software for
your
AMIGA
COMMODORE
IBM
ALL AT
MONEY-SAVING
PRICES!
NEW!!
JUST ARRIVED!
OVER 225,000
ACCESSORIES
AND SOFTWARE
for your
COMMODORE
Many have not been
readily available
until now
See inside
for the items
you've been
wanting!
Shop Early for Best
Selection!
Many quantities
are limited!
Look Inside For . . .
Top 100 Software
Super Specials
Used Software
Accessories
SOFTWARE SUPPORT
USA / CANADIAN TOLL-FREE LINE: 800-356-1179

Check Out These Examples...

Nord and Bert Couldn't Make Head or Tail of It
Certificate Maker
FASTWARE from ACCESS
The Newsroom
Video Title Shop
EPYX
4x4 OFF ROAD RACING
SUPER 1750
CLONE
512K OF RAM
Distributed by Software Support Int.

GAMES	
Leaderboard Golf	$9.97
Beachhead Triple Pack	$9.97
Nord & Bert	$12.97
Ms. Pacman	$9.97
Trump Castle Casino	$9.97
Bureaucracy 128	$12.97
Defender of the Crown	$9.97
Beyond Zork 128	$12.97
4 x 4 Off Road Racing	$9.97
Sega Arcade Smash Hits	$14.97
Hardball/ Tony LaRussa	$12.97
Jeopardy 1-2-Jr. Bundle	$9.97

EDUCATIONAL	
Thinking Cap	$17.97
Stickybear Math	$12.97
Carmen U.S.A.	$26.97
Typing Tutor 3	$12.97
Word Attack	$9.97
Reader Rabbit	$12.97
Sky Travel	$19.97
Perfect Score SAT	$9.97
Word Spinner	$12.97

PRODUCTIVITY	
Super 1750 Clone	$99.95
Newsroom	$14.97
Certificate Maker	$14.97
Cadpak 64	$14.97
Mach 128 Cart	$24.97
Paperclip III 64/128	$29.97
Printmaster Plus	$19.97
Superbase 64 or 128	$24.97
Video Title Shop	$19.97
Bumper Sticker Maker	$12.97
Outrageous Pages	$29.97
Bob's Term Pro 64	$24.97

Items Listed Above Do Not Include Shipping. Call Or Write For Your Free Catalog Listing Hundreds Of Products And Special Offers For Your Computer. Our Order Takers Are On Duty 6:00 a.m. - 5:00 p.m. M - F and 7:00 a.m. - 3:00 p.m. Sat. - Pacific Time.

SOFTWARE SUPPORT

Software Support Int.
2700 N.E. Andresen Rd.
Suite A-10
Vancouver, Wa 98661
(206) 695-1393

CALL TOLL FREE TODAY! **1-800-356-1179**

Major Credit Cards Accepted.

Circle Reader Service Number 190

FD-SERIES DRIVE

It sits there, kind of dark and mysterious, atop my stack of innocent-looking Commodore disk drives. There's no other drive like an FD drive—not for the Commodore, surely, or even for my fancy PC in the other room. Combined with Creative Micro Designs' exquisite operating system, JiffyDOS, the FD delivers an unprecedented level of power and performance for your 64 or 128.

The most obvious feature of the FD is its storage capacity. There are two models from which to choose. The FD-2000 offers 1.6MB of storage on a high-density disk and 800K on a standard 3½-inch floppy. The FD-4000 offers the same as the FD-2000, but it'll let you store 3.2MB on an extended-density disk. Both drives include a utilities disk and come with JiffyDOS.

That's a lot of room, even for GEOS power users like me, who accumulate fonts and clip art like dust balls under the bed. No matter what you spend your computer time doing, from games to telecommunicating to desktop publishing, you'll find plenty of space to do it on the FD.

Without a way to organize and operate that space, however, it'd be close to useless. That's where JiffyDOS comes in. CMD's experience with its hard drives and RAMLink comes shining through with the FD. It knows, for example, that many Commodore programs require a drive which is 100-percent compatible with the 1541.

CMD also knows that Commodore's built-in DOS, designed to fit the cozy world of 5¼-inch disks, would be helpless in the wide-open spaces of a high-density 3½-incher. JiffyDOS, on the other hand, has grown with the technology, from starting out as a system for making your Commodore drives a little smarter and a whole lot easier to use to managing hard drives and multiple megs of RAM with the finesse of a seasoned pro.

The key to handling space for JiffyDOS is partitioning, breaking up the megabytes into smaller sections. The FD drive, like other CMD power peripherals, comes with a disk of utilities to make this a snap.

You don't have to split things up if you don't want to. If you want the thrill of seeing 12,736 blocks free when you list your directory, you can create one big native mode partition.

But, as I said, a lot of programs get ornery if they don't find everything laid out exactly like a 1541. Drop one of these programs into a native mode partition, and it would lock up faster than the local bank at five o'clock. On top of that, it's just plain easier to find your way around in smaller spaces, where you don't wait for a directory listing to scroll by like a freight train at rush hour. This is where smaller partitions, either native mode or those emulating standard drives, are perfect.

You can, for example, create a 1581-size partition of 3200 blocks for downloading files from QuantumLink. You might create another 1581-size partition to run GEOS under the deskTop, since the deskTop can only recognize a partition that acts like a regular drive. You can also create a partition that emulates a 1541 or 1571, right down to the track and sector layout—but you'll notice that it's certainly faster than a 1541 drive.

The FD also beats the 1581 hands down, as I learned from a friend who borrowed the FD to run his BBS for a few days. He usually uses four 1581 drives. Even running simply as a 1581, reading a standard 1581-format disk, the FD easily outpaces the other drives on his system running identical tasks. Then, after configuring the drive as a large native partition, he let the FD take over his upload/download chores. When he realized just how much space that gave him, he suggested that I leave the unit with him for a few more months.

Speed isn't the only plus you get from the FD. The SWAP command, which RAMLink and RAMDrive also have, makes the FD even more compatible. You can, for example, use the FD as a data drive for some programs and even for downloading from QuantumLink by swapping the unit to drive 8. You can also let the FD play RAMLink, giving you a variety of areas for various tasks. The FD will let you switch configurations by popping in a different disk, something you can't do on a RAM device without reformatting the whole thing. This makes the FD drive wonderfully flexible. When you add an actual RAM device into the mix, the possibilities are almost endless!

If you use GEOS, the FD drive will be especially exciting. To be able to fully access its various partition possibilities, you'll want to buy a copy of Gateway. Even with the deskTop, you'll have a fast 1581 at your disposal, which means 3200 blocks to pack full of GEOS files. But once you let Gateway take over, you'll be sailing along at warp speed. You can work with large native mode partitions that you can further divide into subdirectories. You can even switch between partition types, although you can't copy between them directly.

Both geoShell and DualTop will also let you access native mode partitions, but only geoShell in its current version will also let you access subdirectories. In my opinion, a large partition organized into subdirectories is the best possible storage arrangement for GEOS, whether on a disk, in RAM, or both.

The utilities disk that comes with the FD drive includes copy programs to transfer files or whole disks to FD disks and partitions. It also includes FD Tools, which takes care of most disk chores, including formatting and creating various configurations of partitions. You don't actually need to use these programs, of course. If you're the kind of user who likes to tinker, you'll find that CMD has once again provided all the documentation you could ask for. JiffyDOS commands, along with BASIC 2.0 and 7.0 commands, are presented with plenty of examples. There's also lots of technical information to let you really put the FD to work. The drive itself hooks up to your system just like any other disk drive, directly to your computer or daisychained to any other drives.

But, remember, this is not just another drive. It's special; it's an FD drive.

STEVE VANDER ARK

Creative Micro Designs
P. O. Box 646
East Longmeadow, MA 01028
(800) 638-3263
FD-2000—$179.95
FD-4000—$249.95

Circle Reader Service Number 414

New

Big Blue Reader 128/64 - 4.1

Transfers word processing, text, ASCII, and binary files between C64/128 and IBM PC compatible 360K 5.25" and 720K 3.5" disks.

New Version 4.1 features: Transfers ASCII, PET ASCII and Screen Code files including: WordWriter, PocketWriter, SpeedScript, PaperClip, WriteStuff, GEOS, EasyScript, Fleet System and most others. Supports drives # 8-30. New Backup (C128) and Format (1571/1581) programs. Reads MS-DOS sub-directories, uses joystick, and more.

Includes C128 & C64 programs. **Requires 1571 or 1581 Disk Drive.**

Big Blue Reader 128/64 - 4.1 only $44.95

Version 4.1 upgrade, send original BBR disk plus $18.

Bible Search 3.2

1. The entire Old & New Testament text on 4-1541/71 disks.
2. An Exhaustive English Concordance on 2-1541/71 disks. Indexes every word in the entire Bible; 700,000+ references.
3. Incredible five (5) second look-up time, per/word, per/disk.
4. Instant, automatic spell checking of more than 12,800 words.
5. Wildcard and boolean AND, OR & NOT search options.
6. Search the entire Bible in 5 seconds with 1581 or HD (v 3.52).
7. Money back guaranteed!

KJV $49.95 | NIV $59.95 | KJV & NIV $90

Includes: C64 & C128 programs; screen, printer and disk output; users guide, disk case. Available on 7-1541/71, or 4-1581 disks.

☞ Any questions? Call or write for more information.

Also available! Amiga, Bible Search

Order by check, money order, or COD. US funds only.

☞ **FREE Bookrate shipping in US**. *No Credit Card orders.*

Canada & Mexico add $4 S/H, Overseas add $10 S/H ($5 BBR)

SOGWAP Software ☎ (219)724-3900

115 Bellmont Road; Decatur, Indiana 46733

Q: What do all of these drives have in common?

A: They all perform at their best with The Compression Kit.

1541

1571

1581

CMD FD 2000/4000

CMD HD

CMD RAMLink

CMD RAMDrive

FAST

The Compression Kit

Backup System

NEW

7 HOT Must Have Utilities

✓ **Filemaster:** Copy, move, delete, and replace files with ease. (The in house favorite.)

✓ **Procopy:** Copy 1541/1571/1581 disks and CMD native partitions (Single or dual drives.)

✓ **Archiver:** The consumate file backup utility. (It's so powerful and easy to use, it'll make you scream!)

✓ **1541 Disk Boa:** Squeeze those 1541 5.25" SS/DD Disks into convenient backup files (Backup those disks.)

✓ **1571 Disk Boa:** Squeeze your 1571 5.25" DS/DD Disks into convenient backup files (That means both sides folks.)

✓ **1581 Disk Boa:** Squeeze those big 1581 3.5" DS/DD Disks into convenient backup files.

✓ **CMD Native Boa:** Backup your CMD Native Partitions with confidence (Safeguard your valuable data.)

All utilities include a full featured 3 stage verify. Menu driven - No cryptic command codes. Includes a full sized custom 3 ring binder with a 50+ page, easy to understand User's Manual.

"Now shipping v1.04"

Please enclose check or money order for **$39.95** *plus shipping and send to:*

Mad Man Software
1400 East College Drive
Cheyenne, Wy.82007
(307) 632-1178 Information

UPS	*U.S. Mail / P.O. Box*
Ground $4.00	*& Canada $5.00*
2nd Day (U.S.) $6.50 (AK,HI) $10.50	
Next Day (U.S.) $15.50 (AK,HI) $20.50	

Circle Reader Service Number 260

$ $ SAVE TIME $ $ AND $ $ MONEY

Yes, save time and money! Subscribe to the *Gazette Disk* and get all the exciting, fun-filled Gazette programs for your Commodore 64 or 128—already on disk!

Subscribe today, and month after month you'll get all the latest, most challenging, and fascinating programs published in the corresponding issue of *COMPUTE*.

New on the *Gazette Disk!* In addition to the programs that appear in the magazine, you'll also get outstanding bonus programs. These programs, which are often too large to offer as type-ins, are available only on disk—they appear nowhere else.

As another *Gazette Disk* extra, check out "Gazette Gallery," where each month we present the very best in original 64 and 128 artwork.

So don't waste another moment. Subscribe today to *COMPUTE's Gazette Disk* and get 12 issues for only $49.95. You save almost 60% off the single-issue price. Clip or photocopy and mail completed coupon today.

Individual issues of the disk are available for $9.95 (plus $2.00 shipping and handling) by writing to COMPUTE, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

YES! Start my one-year subscription to *COMPUTE's Gazette Disk* right away for only $49.95.*

☐ Payment enclosed (check or money order)

☐ Charge ☐ MasterCard ☐ Visa

Acct. No. ____________ Exp. Date ____________

Signature ____________ (Required)

Name ____________

Address ____________

City ____________

State/ Province ____________ ZIP/ Postal Code ____________

Mail to COMPUTE's Gazette Disk, P.O. Box 3250, Harlan, IA 51593-2430

* Residents of NC and NY, please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.

HPGA8

From Hard Drives to GEOS Software...CMD's got it all

RAMLink Power-Backed REU

RAMLink with 0 MB RAMCard	$199.95
RAMLink with 1 MB RAMCard	$259.95
RAMLink with 4 MB RAMCard	$379.95
Real-Time-Clock for RAMCard (Optional)	$20.00
RAMLink Battery Back-up (Optional)	$24.95
Parallel Cable (RAMLink to HD)	$14.95
1 or 4 MB SIMM's	CALL

HD Series SCSI Hard Disk Drives

HD-40, **85 MB** (Special Edition)	$495.00
HD-100, **170 MB** (Special Edition)	$595.00
HD-200, **245 MB** (Special Edition)	$695.00

FD Series 3.5" Floppy Disk Drives

FD-2000 (800K and 1.6 MB)	$179.95
FD-4000 (800K, 1.6 MB and 3.2 MB)	$249.95
FD Real-Time-Clock Option	$20.00
Box of 10, High Density Disks (1.6MB)	$14.95
Box of 10, Enhanced Density Disks (3.2 MB)	$40.00
Single ED-Disk. (3.2 MB)	$5.00

JiffyDOS

(Specify computer and drive serial number)

JiffyDOS C64-System	$49.95
JiffyDOS SX-64 System	$49.95
JiffyDOS C-128 System	$59.95
JiffyDOS 128-D System	$59.95
Additional Drive ROM's	$24.95

CMD Software

gateWay/64 or 128 (GEOS Desktop)	$29.95
Collette Utilities (Handy Geos Utilities)	$19.95
Perfect Print LQ for GEOS (Laser-like output)	$49.95
geoMakeBoot (Makes Bootable copies)	$12.95
CMD Utilities (Powerful Disk Utilities)	$24.95
JiffyMON (ML Monitor for JiffyDOS 64)	$19.95

GEOS

GEOS 64 v2.0	$44.00
GEOS 128 v2.0	$49.00
geoCalc 64	$40.00
geoCalc 128	$45.00
geoFile 64	$40.00
geoFile 128	$45.00
geoProgrammer	$45.00
geoPublish	$40.00
geoChart	$29.00
Desk Pack Plus	$29.00
FONTPACK	$25.00
International FONTPACK	$25.00
geoBASIC	$20.00
BeckerBASIC	$20.00
RUN GEOS Companion	$20.00
RUN GEOS Power Pak I or II (Specify)	$20.00

Games

AcroJet	$12.00
Airborne Ranger	$16.00
Atomino	$17.00
Ballistix	$13.00
Blackjack Academy	$12.00
Blood Money	$15.00
Chomp!	$10.00
Conflict in Vietnam	$16.00
Elvira, Mistress of the Dark	$13.00
F-15 Strike Eagle	$16.00
F-19 Stealth Fighter	$20.00
Laser Squad	$13.00
Mainframe	$13.00
Marble Madness	$13.00
Menace	$15.00
Navy Seal	$10.00
Red Storm Rising	$16.00
Rings of Medusa	$16.00
RUN C128 Funpak	$15.00
RUN C64 Gamepak	$15.00
RUN C64 Strategy Games 1 or 2 (Specify)	$15.00
Silent Service	$16.00
Skate or Die	$13.00
The Amazing Spider-Man	$15.00
The President Is Missing!	$10.00
The Three Stooges	$10.00
Tie Break Tennis	$16.00
Total Eclipse	$10.00
Ultima III, IV, V (Please Specify)	$17.00
Wizardry V	$24.00

Productivity

OmniWriter with OmniSpell (Skyles)	$30.00
Word Writer 6 (Timeworks)	$30.00
Super Script 64 (Precision)	$15.00
Super Script 128 (Precision)	$20.00
Data Manager 2 (Timeworks)	$16.00
Suberbase 64 Version 3.01 (Precision)	$35.00
Superbase 128 Version 3.01 (Precision)	$35.00
PowerPlan 64 (Abacus)	$16.00
SwiftCalc 64 (Timeworks)	$16.00

Other Productivity

Cadpak 64 (Abacus)	$22.00
Cadpak 128 (Abacus)	$25.00
Chartpak 64 (Abacus)	$17.00
Chartpak 128 (Abacus)	$25.00
RUN Productivity Pak I, II, or III (Specify)	$15.00
RUN Super Starter Pak 1541	$20.00
RUN Super Starter Pak 1581	$20.00
RUN Works	$20.00
Sky Travel (Astronomy)	$20.00

Languages/Compilers

BASIC 64 Compiler (Abacus)	$17.00
BASIC 128 Compiler (Abacus)	$25.00
Blitz! 64 Compiler (Skyles)	$30.00
Blitz! 128 Compiler (Skyles)	$30.00
Cobol 64 (Abacus)	$17.00
Fortran 64 (Abacus)	$17.00
Pascal 64 (Abacus)	$17.00
Big Blue Reader NEW!!! Version 4.1	$39.00

Music/MIDI Software

Dr. T KCS64 & Model-T Midi Interface	$105.00
Dr. T KCS128 & Model-T Midi Interface	$149.00
Dr. T Algorithmic Composer	$20.00
Dr. T 4-OP MIDI Ed/Lib	$20.00
Dr. T CZ-Rider MIDI Ed/Lib	$20.00
Dr. T DX-7 MIDI Ed/Lib	$20.00

Abacus Books

1571 Internals	$12.00
Anatomy of the 1541	$12.00
C128 BASIC Training Guide	$12.00
C128 Computer Aided Design	$12.00
Commodore 64 Tricks and Tips	$12.00
Graphics Book for the C-64	$12.00
Printer Book for the C64	$12.00
Ideas for Use on Your C-64	$10.00

Telecommunications

Dialogue 128	$29.00
SpeedTerm (Abacus)	$25.00
SwiftLink RS-232 Cartridge (Up to 38.4K baud)	$39.95
SwiftLink Modem Cable (DB9-DB25)	$9.95
Commodore 1660 Modem (300 baud)	$10.00
BOCA 2400 Baud Modem	$79.00
BOCA 2400 w/SwiftLink and Cable	$119.00
BOCA 14.4K Baud Modem	$249.00
BOCA 14.4K w/SwiftLink and Cable	$279.00

Misc. Hardware

SID Symphony Stereo Cartridge	$39.95
GeoCable Compatible Print Cable	$20.00
Xetec Super Graphix Jr.	$45.00
Xetec Super Graphix Sr.	$60.00
2+1 Cartridge Port Expander	$45.00
IEEE Flash! 64 IEEE Interface	$90.00
Quicksilver 128 IEEE Interface	$120.00
C-1351 Mouse	$36.00
C-64, C-64C Power Supply (Repairable)	$39.00
C-128 Power Supply (Repairable)	$45.00
1581/1541-II Power Supply	$25.00

ORDERS: (800) 638-3263
INFO: (413) 525-0023

ReRUN Disks

(Any: 1 for $10, 3 for $18, 6 for $24)

- 1985 -

Spring '85	Summer '85
Fall '85	

- 1986 -

January/Febuary	March/April
May/June	July/August
September/October	Nov/Dec

- 1987 -

January/February	March/April
May/June	July/August
September/October	Nov/Dec

- 1988 -

January/February	March/April
May/June	July/August
September/October	Nov/Dec

- 1989 -

January/February	March/April
May/June	July/August
September/October	Nov/Dec

- 1990 -

January/February	March/April
May/June/July	Aug/Sept/Oct
Summer Spcl.	Nov/Dec

- 1991 -

January/February	March/April
May/June	July/August
September/October	Nov/Dec

- 1992 -

January/February	March/April
May/June	July/August
September/October	Nov/Dec

RUN Back Issues

(Any: 3 for $10, 6 for $18, 12 for$24)

- 1988 -
January, February, March, April, May, June, July, August
- 1989 -
January, February, March, May, June, July, August, September, October
- 1990 -
January, May, June/July, December
- 1991 -
Jan/Feb, June/July, Sept/Oct
- 1992 -
January/February, March/April, May/June, July/August, September/October November/December

SCSI Hard Drive for the C64 & C128

HD Series

HD Series Hard Drives are available in capacities up to 200 MB, are fully partitionable, and can emulate 1541, 1571, & 1581 disks while Native partitions utilize MSDOS-style subdirectories. HD's connect easily to the serial bus or parallel via RAMLink. Includes built-in JiffyDOS, SWAP feature and Real-Time-Clock. HD Series Drives offer superior compatibility with most commercial software including BBS, Productivity and GEOS. And with new pricing, HD Series drives offer the lowest cost/MB of any C64/128 storage device.

1.6 MB and 3.2 MB 3.5" Floppy Disk Drives

FD Series

The FD-2000 and FD-4000 disk drives utilize today's latest 3.5 inch technology. FD-2000's support 800K (1581 style) and 1.6 MB (High Density) formats, while the FD-4000's offer support for the 3.2 MB (Enhanced Density) format as well. Fast and reliable, they support 1541, 1571 and 1581 style partitions, Native Mode partitioning and can actually read and write 1581 disks. FD's feature built-in JiffyDOS, SWAP button and optional RTC. High capacity, speed and compatibility make the FD right for every application, including GEOS.

Power Backed Expandable REU

RAMLink

The fastest possible form of storage, RAMLink provides instant access to files and retains data while your computer is turned off. Easy to use and expandable up to 16 MB, RAMLink utilizes the same powerful operating system found in the HD. RAMLink also offers built-in JiffyDOS, SWAP feature, reset button, enable/disable switch, pass-thru port and RAM port for REU/GEORAM use. Ideal for those requiring maximum speed, expandability and compatibility with all types of software and haroware including GEOS.

JiffyDOS

Speeds up disk access by up to 1500% while retaining 100% compatibility with software

- Speeds up Loading, Saving, Verifying, Formatting and Reading/Writing of Program, Sequential, User and Relative files unlike cartridges which only speed up Loading and Saving of PRG files
- Built-in DOS Wedge plus 17 additonal features including file copier, text dump, printer toggle, and redefinable function keys make using your computer easier and more convenient
- ROM upgrade installs easily into most computers and disk drives. Supports C-64, 64C, SX-64, C-128, 128-D, 1541, 1541C, 1541-II,1571, 1581 and more. 128 system supports both 64 and 128 modes and upgraded Kernal routines.

U.S. Shipping Information

Books & Software: First Item $5.00, plus $1.00 for each add'l item. **Hardware:** $5.50 per item, 2nd Day Air $10.00. **Power Supplies:** $7.50 ea. 2nd Day Air $14.00. **Hard Drive:** $15.00, 2nd Day Air $25. **RAMLink, FD Drive:** $9.00, 2nd Day Air $16.00. **RUN Issues:** $5.50 (3), $6.50 (6), $7.50 (12). **Note:** Prices subject to change without notice. Call for current price and availability. ALL Foreign Orders Call or Write for shipping details. **Payment:** MC, Visa, Money Order or Bank Check. COD shipments add $5.00. COD's over $200.00 require advanced deposit. Personal checks are held for 3 wks. No refunds on opened software. 30 day return policy. 10% restocking fee is required on all returns.

Creative Micro Designs, Inc.
P.O. Box 646, E. Longmeadow, MA 01028
Orders: (800) 638-3263
Info: (413) 525-0023
BBS: (413) 525-0148
Office Hours: 9 AM to 5 PM, EST, Monday thru Friday

Circle Reader Service Number 139

REVIEWS

SIMPLE SOUND

Interested in programming sound on your SID sound chip? I attempt programming only rarely—then mostly in an effort to understand how things work. When I do look into something technical, I want to be given just the information I need. Too much becomes overwhelming. Simple Sound, from Andor House, provides the right amount of information in small digestible chunks to familiarize you with the nearly infinite capabilities of the famous Commodore SID chip.

Sound is a desirable element in a program. It adds punch and pizazz—and it can be useful as a reminder or cue to respond. The sound capabilities of the 64 are too important for a programmer to ignore, and Simple Sound makes the introduction painless. Welcome to kindergarten.

The program begins by supplying documentation on disk, ready to be printed. After a brief introduction of what is available in the program, print out the main article that guides you through the sound tutorial. The program points out right away that it's taking you only through programming voice 1 in BASIC. The SID chip has three voices, but for an introduction to sound, voice 1 is all you really need.

You are shown how to clear the SID chip and how to program it by poking values into it. You are then referred to one of several other programs on the disk called Print Hi/Lo Frequency. Loading and listing this program to the screen gives you the high and low frequencies for musical notes in a chart of eight octaves listing the notes and their frequencies. Run the program to get a printout on paper.

Next, the program describes the sound envelope, which is the shape of the sound—how it begins, holds, and fades away. At this point, you are referred to another program on disk called ASDR Graph. This program displays a typical sound envelope and its ASDR settings. This is all explained in another article.

Finally, you are introduced to waveforms. This topic is illustrated by its own program and graph.

The main article fills four pages printed at 40-column width. As the article takes you through each step, it lists a sample program so you can see how it works. This program can then be loaded and run to hear the sound that it creates. You can then list it to study the example in more detail.

This sample fits on one screen for convenience and contains remarks to explain what each line does. You can then experiment by changing values. This gives you a good idea of what programming sound is like.

The disk also carries some sound effects programs for you to experiment with. All of these samples are written with remarks and suggestions for changes that you might want to make.

Another program, Notecracker, provides a quick way to see what small changes can do to sound by allowing you to enter values for each element you've learned about in the lessons. You then get to hear your sounds.

Words that come to mind when I use this program are *considerate, convenient,* and *clear.* Simple Sound puts programming the SID chip within reach of the novice. The author, Don Radler, shows consideration in the small size and simple nature of the sample programs that he builds with you. There's convenience in that the program is self-contained with its concise documentation, onscreen illustrations, and examples.

Finally, the clarity of the explanations is the program's greatest asset. It makes it downright easy to program voice 1. After going through the tutorial a few times, going on to master voices 2 and 3 no longer seems intimidating. You'll feel more comfortable working with sound after you've established a good foundation with Simple Sound.

ROBIN MINNICK

Andor House
Don Radler
3907 SE Second Ave.
Cape Coral, FL 33904
$4.95

Circle Reader Service Number 415

TAKE 25% OFF THE TOTAL OF YOUR ORDER!
Valid from NOV. 01 - NOV. 30, 1993.
C-64 ‡ C-128 ‡ C-16 ‡ Commodore +/4 Computer Software
PSG/ Prn Shp Grph--Sd/sides-G/games-M/math-S/sci-E/Eng
ED/educ.-GE/geog.-UT/util-PR/prod-TE/telecom--MU/music
PSGraph, state A/3 Blk/non-C= or B/2 Blk/C= Printers!

. . . . . ITEM + COST + SHIPPING & HANDLING . . . . .

A-KJV BIBLE+PSG+ MU +G	35+4	N-RecipePotpourri-178	7+1
B-Hol. Graphics/Music	7+2	O-KJV BIBLE -- +/4	30+4
C-SMario3,Krkout,Pkr,+	5+2	P-GPakC C128-40/80 60G	13+2
D-128 Potpourri UPEGT	5+2	Q-ClassMU Bach-Haydn+	7+2
E-PLUS/4 Combo UPEGT	5+2	R-PETS 347 PSG dom.	10+2
F-Bks-Inst. Activities	1+2	S-SPORTS 419 PSG Mix	10+2
G-ED Pak-A MSEGE etc.	13+2	T-CARTOON Char 202 PSG	5+2
H-ED Pak-B MSEGE etc.	70+7	U-COMPTR PARADE 255PSG	5+2
I-Bks Amazing C64or128	3+2	V-FASTCAD V1--Enhanced	---
J-GPak-A SMario,II,III	---	CAD 3.0+SupportFiles	10+2
Brewery+Tetris Clones	---	W-FunGraphicsMachDemo+	
C64/64C/C128-40/80cl	9+1	50fnt+ HiRes ScrnDmp	6+2
K-GPak-B Trashmn-Outpst	---	X-1541/71/81 UTL Combo	12+3
Starraider-Air Demon	9+1	Y-GEOS Programmer Man.	---
L-People-554PSG MFCh.	8+2	and GEOS V.1.0 Doc.	8+2
M-Disk Notcher-Now use	---	Z-KJV BIBLE for C-128	---
back of DD/DS disks	3+1	40/80col rder/prnter	35+4

<> Available-JIM HEHL COLLECTION +/4 ‡ C-16 ‡ C-64 <>

JH00-BibleTime+4/64 25G	6+1	JH08-Spell Chkrs +4/64	5+1
JH01-+4 GPak Over 200G	30+5	JH09-PROJECTS +4/64	5+1
JH02-+4/64 TerminalPak	9+1	JH10-HAM RADIO PRGS+4	4+1
JH03-C16 Combo 70 prgs+	4+1	JH11-G& Prgs C16/+4/64	4+1
JH04-Superbase+4 & Docs	4+1	JH12-ACE+4/64FISim JYS	7+1
JH05-H.A.L.(updt)w/docs	---	JH13-Saboteur+4/64 Spy	7+1
Speedscrpt/Asemblr+4	9+1	JH14-RugRider+4/64 JYS	7+1
JH06-UT+4..Prntr,Cprs+	12+3	JH15-Graphics+Progs +4	7+1
JH07-Prnted Wd/Fle.C64	5+2	JH16-MacPaintVu w/pics	2+1

Send SASE for HEHL Collection and CLEARANCE ITEMS Info.
Reg. $/disk sd: $3@/1-3 $2.50 @/4-9 $1.75 @/10-19, etc.
CATALOG & disk: C64/128-47p = $2+2 ‡ Plus/4-18p = $2+1
PYMT-MO/CK-US$/Bank-CA.+8.25% tx/item -- No COD/Crt.Crd.
HANDLING: Bank Check/M.O.-1st and Checks when cleared.
S & H = USPS Domestic and International Rates
TO: KFPDS/Kenneth Franklin--P.O. Box 470464
Los Angeles, CA. 90047-0464
We've most of the PD Select C= Library.
This is our year # 3! Thanks!!!

Circle Reader Service Number 197

8 BIT
PO BOX 542
LINDENHURST NY 11757-0542

HAPPY HOLIDAYS!

KEYBOARD SEELS
DON'T LET YOUR COMPUTER SUFFER A MELTDOWN
Protects your keyboard even while you type !
C64 or Vic 20.......#VS64
Comm. 64C.........#VS64C
Comm. 128..........#VS128
Seel # VS128 also fits your Commodore 128D computer.
Save your Commodore !
ONLY $19.00

DON'T MISS OUT !
Once again 8 BIT is making your holidays a little BIT cheerier. We are repeating our Special Holiday Offer! If you have not yet received your offer, or your copy of our NEW CATALOG, contact our office.

QUICK GUNNE
Joystick / Flyingstick
4 seperate fire buttons to assure your comfort! (Trigger, Thumb, and both left & right base.) Hand Contoured Stick And 4 suction cups on the bottom of the base. for complete control !
FOR SERIOUS GAMERS ONLY!
ONLY $15.00

Further Protection for your Commodore
5.25" Cleaning kit.....$2.50
3.5" Cleaning kit......$2.50
Mouse Cleaning kit..$3.00

MINDSCAPE POWERPLAYERS JOYSTICK
ONLY
$5.00

6 PAC SETS
PD & Shareware Sets
A BIG HIT AT ONLY $ 5.00
1: ASST: *StarTrek+*
3: EDUCATIONAL
4: GAMES: *Tetris +*
5: DEMOS/MOVIES
6: PRODUCTIVITY
7: GEOS CLIP ART
8: RECIPES SET
9: UTILITIES SET
A: CHRISTMAS
B: ASST: *SuperMario*
C: MUSIC SET
D: ART GALLERY
E: GEOS FILES
F: F. G. M.
G: GAMES: *Mario 3 +*
H: HACKER PAC
I: PSA CLIPART
J: Telecommunications

SIX PAC # 2 $ 10.00
ADULT IMAGES
You must be over 18 To receive this 6PAC! Signature Required !
Call to request a more descriptive 6 PAC list !

SHIPPING $2.00 For First Item + $1.00 each additional item
***U.S. Funds Only! *SORRY NO C.O.D.'s OR CREDIT CARD ORDERS**
FOR A FREE COPY OF OUR CATALOG, CALL:
(516)-957-1110 MONDAY - FRIDAY 10 am to 5 pm EST

Circle Reader Service Number 162

Only $24.95

FOR THE C64 AND C128 IN 64 MODE

Fun Graphics Machine

FUN GRAPHICS MACHINE (FGM) IS AN "ALL-IN-ONE" GRAPHICS PROGRAM FOR THE C=64. WHAT CAN BE CREATED WITH FGM IS ONLY LIMITED BY YOUR IMAGINATION. JUST A FEW EXAMPLES:

SUPPORTS ALL CMD DRIVES

BUSINESS CARDS
CUSTOM LABELS
VIDEO TITLING
NEWSLETTERS
CALENDARS
DIAGRAMS
POSTERS
FORMS
SIGNS
CHECKS
OVERLAYS
BROCHURES
LETTERHEADS
CERTIFICATES
GREETING CARDS
DISK ENVELOPES

WORKS WITH 1541, 1571 & 1581 DRIVES

FUN GRAPHICS MACHINE SUPPORTS IMPORTING GRAPHICS AND HI-RES SCREENS FROM MANY POPULAR PROGRAMS INCLUDING:

SUPPORTS MULTIPLE DRIVES

KOALA
GEOPAINT
RUNPAINT
PRINT SHOP
ADV OCP ART
VIDEO BYTE II
HANDYSCANNER 64
COMPUTER EYES
PRINTMASTER
NEWSROOM
GEOWRITE
DOODLE

THIS AD CREATED WITH FGM

GEOS SCREENS CAN BE CAPTURED SIMPLY BY RESETTING COMPUTER THEN LOADING THE FUN GRAPHICS MACHINE.

FUN GRAPHICS MACHINE FULL KEYBOARD OVERLAY ---$3.50 EA
PLEASE STATE COMPUTER (C64, C128, SX-64) OR C64 IS SHIPPED

FUN GRAPHICS MACHINE DEMO DISK THIS IS A PREVIEW OF WHAT FUN GRAPHICS MACHINE IS ALL ABOUT------------**$2.00**

→ FOLLOWING DISKS REQUIRE THE FULL BLOWN VERSION OF FGM ←
FGM **FONTS** OVER 90 FONTS IN FGM FORMAT----------------**$5.00**
FGM **CLIP ART VOL.1** OVER 200 EXCELLENT GRAPHICS-----**$8.00**
FGM **CLIP ART VOL.2** OVER 150 EXCELLENT GRAPHICS-----**$5.00**
FGM **GRAPHICS DISK 1** 3 BLOCK P.S. STYLE GRAPHICS-----**$5.00**
FGM **CALENDAR TEMPLATE** DAILY, WEEKLY, MONTHLY-------**$5.00**
FGM **OVERLAY TEMPLATE DISK** MAKE FULL KEYBOARD OVERLAYS STATE COMPUTER FOR OVERLAY TEMPLATES OR C64 IS SENT--**$5.00**
FGM **UPDATE DISK V6.5** UPDATES FGM V6.x TO FGM V6.5--**$2.00**

PLEASE ADD FOR **SHIPPING AND HANDLING** PER ORDER ----$3.50
FOREIGN ORDERS: FOR AIR MAIL ADD ADDITIONAL AS FOLLOWS:
CANADA/MEXICO **$1.00**, AUSTRALIA **$10.00**, ALL OTHERS **$5.00**
U.S. FUNDS ONLY SORRY NO CHARGE CARDS

The FGM Connection, P.O.Box 2206, Roseburg, OR. 97470
FOR MORE INFORMATION CALL 503-673-2234

SOFTWARE CLOSEOUTS
For Commodore 64 & 128

ANY ITEM IN THIS AD.... ONLY $5
BUY 10, GET 1 EXTRA FOR FREE!! >>>> NEW ITEMS ADDED THIS ISSUE!!!<<<<

PRINTER'S PATRIOT, SPELLICOPTER, TAG TEAM, MONDU'S FIGHT PALACE, COMBAT COURSE, INDOOR SPORTS, SHINOBI, ZORK 1, QUANTUM LINK, TURBO OUTRUN, UNTOUCHABLES, SHOGUN, FEUD, MISSION ON THUNDERHEAD, STARCROSS, ALCON, UNDER FIRE, MACBETH, RASTAN, BUBBLE BOBBLE, PET EMULATOR, ARKANOID, ARKANOID 2, QIX, SKY SHARK, CHAMPIONSHIP BASEBALL, DAMBUSTERS, DEADLINE, ONE MAN & HIS DROID, PLASMATRON, PRO-GOLF, SPITFIRE ACE, HELLCAT ACE, SUSPENDED, ZORK 2, ZORK 3, SILENT SERVICE, RENEGADE, ARTURA, BUTCHER HILL, CONFLICT IN VIETNAM, REVENGE OF DEFENDER, FINAL ASSAULT, PRESIDENT ELECT, GHOSTBUSTERS 2, SKATE WARS, PUFFY'S SAGA, CHESSMASTER 2100, SONGWRITER, TERROR, GHOSTWRITER 128, RICK DANGEROUS, T.V. SPORTS FOOTBALL, EASY SPEECH, SPACE HARRIER, M.A.C.H., F-15 STRIKE EAGLE, AIRBORNE RANGER, RAMBO 3, FAST BREAK, ACROJET, HEROES OF THE LANCE, NETHERWORLD, XENOPHOBE, DIE HARD, TAKE DOWN, THE GAMES:WINTER, GOLDEN OLDIES, WORLD'S GREATEST FOOTBALL, MINDSHADOW, SKYFOX, PITSTOP 2, TOP GUN, TOWER TOPPLER, MANIAC MANSION, BEYOND THE BLACK HOLE, CALIFORNIA GAMES, DREAM TEAM, SERVE & VOLLEY, DEVON AIRE, FIGHT NIGHT, JET BOYS, SUPER SUNDAY, BOP 'N RUMBLE, TRI-MATH, TECHNO-COP, MAGIC MADNESS, TURTLE TOYLAND JR., RAMBO, STATIS PRO BASEBALL, SGT. SLAUGHTER, CLUBHOUSE SPORTS, DIG DUG, CUTTHROATS, CROSSBOW, COMICS, KIILLED UNTIL DEAD, PSI 5 TRADING CO., COMPUTER DIAGNOSTICS, PRO TOUR GOLF, TAU CETI, GREAT ESCAPE, ARMY MOVES, CAPTAIN FIZZ, INTO THE EAGLE'S NEST, GAUNTLET 2, BOSTON COMPUTER DIET, BAD DUDES, BATMAN CAPED CRUSADER, MONDAY NIGHT FOOTBALL, ROBOCOP, EYE OF HORUS, MATH MAZE, DESIGNASAURUS, EUROPEAN NATIONS, B.A.T., WARLOCK, THUD RIDGE, DARK CASTLE, SUMMER GAMES 2, WINTER GAMES, IMPOSSIBLE MISSION 2, SUB BATTLE, WORLD GAMES, TONY LARUSSA BASEBALL, PARALLAX, SPY VS. SPY, NINJA, PENSATE, QUEST OF THE SPACE BEAGLE.

TONS OF ADDITONAL DEALS LISTED IN OUR CATALOG...ORDER NOW!!!

VISA/MC ORDERS CALL TOLL-FREE
1-800-676-6616
Credit Card Orders Only ! ! ! ! ($25 minimum)

TO ORDER: Send check or money order, including shipping charges of $5 for U.S.A., $8 for Canada, $16 all others. California addressesmust include 7.25% sales tax. **To check for an item not listed here, or other info, call (805) 544-6616.**
ALL SALES FINAL!!! SUPPLIES ARE LIMITED!!

COMPSULT
P.O. BOX 5160
SAN LUIS OBISPO, CA 93403

WE HAVE LOTS MORE C-64/128 PLUS TONS OF SOFTWARE FOR IBM, APPLE, MAC, AMIGA, ATARI & MORE!

Circle Reader Service Number 114

FEEDBACK

Where to find Commodore software, how to clean your keyboard, and a source for Okimate printer paper

Where's the Software?

Is the 64 starting to die? I sure hope it isn't. Unfortunately, it seems to me that there are fewer and fewer places selling 64 software these days. There are only two stores in the city of San Antonio that still sell 64 products. Are major companies still producing products for us? If so, who are they? And where can I get GEOS for the 64?

DOUG DENNY
SAN ANTONIO, TX

In business terms, the 64 is considered to be a mature market. That's a polite term for one that isn't growing. The computer has been around for more than a decade, and almost everybody who wants a 64 already has one. Also, those users have already purchased most of the software that they want, too. Before they dropped the Commodore line, software developers saw sales of their products plummet. New titles just didn't sell, and merchants can't devote shelf space to items that the public doesn't buy. Unfortunately, a large number of people who once used Commodores have moved on to other platforms, and that's where the action is now.

There is still a good solid core of dedicated Commodore users, but it doesn't have the numbers it once did. All of this means that whenever a new product for the 64 comes out, instead of 100,000 copies being sold, the number has dropped to 1000—or less. Major companies with large overheads can't make a profit on sales of that size.

If you look through the advertisements in Gazette, you'll see new products for sale, but in most cases, the firms offering them are small. In many ways, the market is back to where it was in the early days. A lone programmer gets an idea, writes the code, and then sells the program by mail from his or her house or post office box. Only now, the number of buyers is no longer growing.

There are still a few major distributors for Commodore products. Two of the largest are Software Support International (800) 356-1179 and Tenex (800) 776-6781. Call for a catalog. Moving up in the number of 64/128 products handled is Creative Micro Designs. This firm distributes a good number of Commodore items, both hardware and software. CMD is also the place to buy any GEOS products. Call (800) 638-3263 to order or to request a catalog.

Last December, Gazette published a list of large and small companies that still handle Commodore products. An updated version of that list is in the works. The best way to keep the 64 alive is to support those companies that support the 64.

Keyboard Cleaning

I have to press some of the keys on my 64 quite firmly before they register. I think the contacts must be dirty. I've read the procedure for dismantling a keyboard and cleaning it, but now that I need the instructions, I can't find them. Can you help?

JIM GORDON
BLOOMINGTON, IN

Keyboard problems can often be traced to dirty contacts. Some keys may stick slightly, resulting in their printing twice. Cleaning usually takes care of these problems. It's not too difficult, but it does require some care. Before you tackle the job, have on hand some isopropyl alcohol, a soldering iron, and a couple of Phillips screwdrivers.

Turn over your 64 and remove the three screws. This will let you remove the top of the case. Be careful with the plastic tabs that act as hinges. Unplug the wires that are connected to the red pilot light. A plug pulls out from the socket; you don't have to unsolder them.

Turn the top of the case down, exposing the bottom of the keyboard. You'll see a number of small Phillips-head screws holding on the keyboard bottom. Remove these screws and put them in a safe place. Then, unsolder the two bare wires that connect beneath the Shift Lock key. Do not unsolder any of the colored wires.

Remove the bottom cover of the keyboard, and you'll see a large circuit board on the other side. This is where the contacts are for the keys. If you see any obvious dirt or foreign material, be sure to remove it. Then dampen a clean cloth with the alcohol and rub it gently over the entire circuit board. Pay close attention to clean the square circuit areas.

Reach under the keyboard and press each key. A bar under each key that makes the actual contact will come up out of a hole. Clean each of these bars as well.

Allow the board to dry thoroughly and then resolder the two wires and reassemble the keyboard. It should work good as new.

Okimate Paper

I run three businesses from my home: a mobile DJ service, a radio/TV production facility, and a message-on-hold service. I do it all on a 128 with GEOS. I have two 1571 drives and a 2MB BBG from PPII that I manage with CMD's Gateway.

I alternate among three different printers, depending on the job I am doing. I use a Star NX-1000C for everyday printing; a Brother HR-25 daisywheel for letter quality business correspondence; and an Okimate-10 for banners, posters, and other graphics.

The Okimate (thermal transfer and no ribbon, remember?) works great with the high-quality fax paper that's available in most office supply stores. A guy in a print shop recently asked if the flier I'd printed on the Oki was printed on a laser printer.

Thanks for all your support over the years, and I guess I'll keep banging away on this old thing until the keys fall off.

PRESTON THOMPSON
FREDERICKSBURG, VA

Thanks for the tip, Preston. I'm sure many readers will appreciate this new source of paper for their Okimate printers.

Renumber

I am writing my first decent-sized BASIC program for the 64. Through an interface on my user port, it will operate the solenoids of a game. To proceed, I need two things.

First, I need a program that will renumber the lines of my program. It must allow me to select the starting line number and the interval.

Second, I am trying to locate a book called *Commodore Interfacing Blue Book*. The publisher is Microsignal Press, but it is out of business. Can anyone help me locate this book?

F. KOSTER
171A LONG HILL DR.
YORKTOWN HEIGHTS, NY 10598

Perhaps one of our readers can help you locate the book you want, but we have a renumbering utility that works with the press of a function key. Gazette published Renumber 64 by Hubert Cross in the November 1987 issue. This short machine language utility does what you want, and it also renumbers references made in GOTOs, GOSUBs, ON-GOTOs, and ON-GOSUBs.

A few copies of this issue are still available. The U.S. price for the magazine is $6 and $3 for the companion disk. These prices are valid for any issue prior to October 1990. You can order by writing to COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

Good luck with your game. Let us know how the project turns out.

Disk Finder

I am writing a program that I want to be as user friendly as possible. I think I have covered all the possible problems that I can think of but one. Is there a routine that I can use to tell whether or not there's a disk in the user's 1541 drive?

RICHARD BLAKE
ALTON, IN

Trying to anticipate every error that a user might make can mean a lot of code for your program, but it's a good idea. Here's a short routine that might do the trick.

It's a good idea to check first to make sure that the drive is turned on. That's handled in lines 1000–1040. Then try to initialize the disk and read the Error channel. We do that in lines 1050–1100.

This routine could be inserted at the start of your program if you omitted the RETURN command in line 1110 and appended the rest of your code from there.

```
1000 OPEN 15,8,15: CLOSE 15
1010 IF ST = 0 THEN 50
1020 PRINT“ TURN ON YOUR
     DRIVE AND PRESS A KEY”
1030 GET A$: IFA$ =“ ”THEN 1030
1040 GOTO 1000
1050 OPEN 15,8,15,“I”
1060 INPUT#15,E: CLOSE15
1070 IF E = 0 THEN 1110
1080 PRINT “INSERT A DISK IN
     YOUR DRIVE AND PRESS
     ANY KEY”
1090 GET A$: IFA$ =“ ”THEN 1090
1100 GOTO 1050
1110 RETURN
```

Software Wanted

I've looked all over for software for the 64 and I've found a lot of good word processors, but there's one program that I can't find. I'd like to have a program that checks my grammar after I've written something. Has anyone written such a program or seen such a program for the 64?

MIGAILL RICE
CINCINNATTI, OH

Has Gazette ever published a hurricane tracking map? If not, I'm sure those of us who live along the Atlantic coast would like to have one. I'd like to see a program that would present a map of the Atlantic coastline, Gulf of Mexico, and Caribbean. Each day you could enter a hurricane's latitude and longitude, and the program would plot the points on the map. As the plots were updated, you could see the path of the storm and have some idea of where it might strike next.

LOU ROSEN
CORAL GABLES, FL

If any programmers have written programs similar to these, we'd be interested in publishing them.

Do you have a question or comment? Write to Gazette Feedback, COMPUTE Publications, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408. ❐

A renumbering utility for programmers, a way to determine whether or not a disk is in a drive, and reader requests for programs

PD PICKS

Steve Vander Ark

ZIX AND STONES

OK, enough serious stuff for a while. It's time for another shot of adrenaline-pumping, toe-curling action games. I've played through a bunch of great public domain and shareware games to bring you a couple of the best programs for the 64 and 128. It's a tough job, but someone has to do it.

Before we charge headlong into the latest batch of the deadliest games around, let me run something else by you. A popular telecommunications service of interest to Commodore users is GEnie. The Commodore libraries on GEnie are quite extensive. If you happen to know the file number of the program you want, all you need to do is request a download and feed in that number. That's the fastest way to download a specific program, and since you're paying by the minute, *fast* means you save money.

Here are a couple of outstanding games that will make your list of Top Ten favorites.

Just because I'm such a nice guy, I'll include the GEnie file number of each PD program that I mention in this column. If I find that the file isn't available on GEnie, I'll upload it there. How's that for service?

This month's first game, Super Rockfall, is another masterpiece from Mark Dickenson. The other is Zix, an outstanding version of the old Breakout game. Both of these great programs will get your blood pumping and your joystick jumping.

Super Rockfall by Mark Dickenson. Q-Link filenames: SUPROCKFALL1.SDA (190 blocks) and SUPROCKFALL2.SDA (28 blocks). Both files are required and were uploaded by Mark AD E. GEnie file number is 8916.

This outstanding 64 program is reputed to be the best game on Q-Link. That's a matter of taste, but from a reviewer's point of view, considering programming pizazz, user friendliness, game mechanics, and playability, Super Rockfall wins hands down.

Yes, it's a fabulous game, a remake of the venerable Dig Dug arcade game. There's more strategy per screen in Rockfall than you can imagine. And there's plenty of chance to abuse your joystick as you try to tumble little boulders into the right places and try not to start an avalanche. All this action should certainly put Super Rockfall into anybody's Top Ten, but there's a lot more. For example, there's a screen editor to let you create your own fiendish challenges to foist on your friends.

A lot of delighted Rockfall fans have done just that, and you'll find a host of player-created levels on Q-Link. Mark Dickenson also added a very nice music player to the game, which, coming from the author of StereoSIDPlayer, is not surprising. When you download the game, it comes with a nice selection of SID music files to brighten your day. You can even set the game to recognize an extra SID sound chip if you have one.

The documentation is another strong point. The simple fact that it has documentation sets it above a great many games you'll find on Q-Link or GEnie. Mark gives you not only documentation but also a slick little viewer that lets you read it onscreen.

Zix by Pierre Messier. Q-Link filename: ZIX2 (21 blocks). Uploaded by Harold W1. GEnie file number: 6647.

One nice feature on Q-Link is that users can post notes about files in the libraries. When you want to find a good program to download, you can browse through these comments and find out if there is a problem with a program or if other users have liked it. I use these notes a lot as I dig for treasures in the Q-Link libraries, and when I started reading the comments on Zix, I realized that I had hit pay dirt. Someone even said that Zix was probably the best game on Q-Link after Super Rockfall. That got my attention.

The first thing I noticed about Zix was how short it is. A short program is often short on graphics or sound effects. In this case, though, short simply means tight, efficient programming in machine code, which results in an addicting and exciting game.

The inspiration for this game, as I mentioned, is Breakout. I always loved that game, especially the fancier versions that included falling power pills and weird but wonderful brick layouts. Zix incorporates all these goodies, including the best one of all, the one that lets your paddle fire little bombs at the bricks. I don't know about you, but I love a game that lets you blast things into pixel dust with an endless supply of missiles.

There are actually two versions of this game on Q-Link. This one is the updated version which has a few minor bugs fixed and also includes paddle-speed control. The graphics and brick designs are the same in each, as are the various power pills. There is no documentation available, so you'll have to use trial and error to figure out what each pill does. There is also no way for you to know that pressing a number from 1 to 9 before you start playing adjusts the paddle speed or that you can cheat and get 99 lives by pressing Control-P, but, hey, now I've told you!

Each of these great games is a shining example of Commodore programming at its best. You will seldom find programs this exciting—at least not until you see what I've found for next month! ❒

PUMP UP YOUR PRODUCTIVITY!

Harness the potential of your 64 and 128 with these powerful programs.

Get more work out of your 64 and 128 with these two new disk products from COMPUTE's Gazette – the 1992 Best of Gazette Utilities, and the Gazette Graphics Grab Bag!

The 1992 Best of Gazette Utilities

Seize control of your operating system and your world!

Here's what's on it–MetaBASIC 64, MetaBASIC 128, Quick, Sprint II, Ultrafont+, RAMDisk 64, RAMDisk 128, BASSEM, SciCalc 64, List Formatter, MegaSqueeze.

The Gazette Graphics Grab Bag

Do it all with Commodore graphics!

Here's what's on it–Starburst Graphics, Screen Designer 128, 128 Graphics Compactor, 64 Animator, VDC Graphics, Dissolve 128, Super Slideshow, 128 Animator, 1526 PrintScreen, Supratechnic, Medium-Resolution Graphics, Screen Maker, GAS!64–Special Edition, GAS!128–Special Edition.

ORDER THEM TODAY!

Extend Your Computer Power With This Powerful Software!

YES! I want to pump up my productivity! Please send me the disks checked below at $11.95 each.

___The 1992 Best of Gazette Utilities

___ The Gazette Graphics Grab Bag

___ Subtotal

___ Sales Tax (Residents of NC and NY please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.)

___ Shipping and Handling ($2.00 U.S. and Canada, $3.00 surface mail, $5.00 airmail per disk.)

___ **Total Enclosed**

MasterCard and VISA accepted on orders with subtotal over $20.

___ Check or Money Order ___ MasterCard ___ VISA

Credit Card No. ____________________ Exp. Date ________

Signature ____________________ (Required)

Daytime Telephone No. ____________________

Name ____________________

Address ____________________

City ____________________

State/Province ____________________ ZIP/Postal Code ________

Mail this coupon to COMPUTE's 1991 Utilities, 324 West Wendover Ave., Ste. 200, Greensboro, NC 27408.

BEGINNER BASIC

Larry Cotton

WHERE'S THE DATA? PART 3

Last month, we wrote a short program to save a to-do list to a floppy disk. If you dutifully followed along, your list is now embedded as magnetic particles on a piece of Mylar, awaiting retrieval. Here's a short program to retrieve your list from the disk to your television or monitor screen. The items pop onto your screen as they're pulled from disk.

```
148 PRINTCHR$(147)
149 DIMI$(100)
150 INPUT"[DOWN] NAME OF
    LIST TO LOAD";L$: IFL$=""
    THEN END
160 OPEN1,8,0,L$
170 INPUT#1,X
180 PRINT
190 FORT=1TOX: INPUT#1,I$(T):
    PRINTI$(T): NEXT
200 CLOSE1: END
```

After you've saved items to a file on disk, you need another program to read them again.

Line 149 dimensions your item array (allots memory space for the list) to the same maximum size as when it was saved. Line 150 uses the INPUT statement to get the name of your list. Be sure to load the list using exactly the same name you used when you saved it.

Line 160 is this month's critical syntax line. The 1 after OPEN is the file number—the same number you gave the file last month. The 8 means you're communicating with the disk drive. The 0 between the second and third commas tells the disk drive to load (as opposed to save) a file. L$ is the name of the file that was input in line 150.

INPUT# in line 170 is the command to pull the data from the disk. It's the opposite of PRINT#, which you used last month to save the data on the disk.

The first thing we must get from the disk is the number of items that are on your to-do list. That quantity was sent to the disk last month as the variable X. You don't have to use X again per se, but you must use a similar variable type. X$ won't work.

Once we have the quantity X, we can begin pulling each item from the disk, one by one, using a FOR-NEXT loop, the upper limit of which is X. Line 190 does the job. It uses INPUT# to load the array I$(T), then prints each item as it's retrieved. After the items have been loaded from the disk and printed onscreen, the file is closed in line 200.

Let's merge this and last month's programs. We can then make a couple of modifications to add a simple menu. Follow these steps.

1. Type in this month's program and save it to disk in case you make an error.
2. Clear the screen.
3. List the program at the top of the screen, but don't run it.
4. While this month's program is showing, type under it *LOAD"FILENAME",8,* where *FILENAME* is the name of the save-to-disk program we wrote last month.
5. Last month's program is now in the computer's memory, and this month's program is showing on your screen. Don't clear the screen.
6. Move your cursor to the top of the screen and begin pressing the Return key on each of this month's program lines. When finished, the programs will be merged.
7. Clear the screen and list the program to confirm that you have lines 10 through 200.
8. Add these lines.

```
35 PRINT"[CLR][DOWN] DO YOU
   WANT TO SAVE OR"
36 PRINT"[DOWN] LOAD A LIST
   (S/L)?"
37 GETA$: IFA$ <>"S" THEN
   IFA$ <>"L" THEN37
38 IFA$ ="L" THEN150
```

9. Add *END* at the end of line 140. It should read as follows.

```
140 CLOSE1: END
```

10. Remove lines 148 and 149.
11. Save the merged program with a new filename, such as TODOLIST.

Lines 35–38 add a simple two-choice menu. Save includes typing, saving, and printing the list on your TV or monitor screen. Load loads the list and prints it onscreen. Feel free to elaborate on and refine this menu to your liking. With a little creativity and some skillful programming, you can add features such as deleting or changing an item, prioritizing the list, or printing out a hard copy.

Here's the entire listing with checksums for The Automatic Proofreader to help you avoid typing errors.

```
AM 10 PRINTCHR$(147)
GQ 20 DIMI$(100):PRINT" NO MOR
      E THAN 100 ITEMS!":PRINT
      "{DOWN} PRESS ANY KEY TO
       BEGIN."
GR 30 GETA$:IFA$=""THEN30
HP 35 PRINT"{CLR}{DOWN} DO YOU
       WANT TO SAVE OR"
CE 36 PRINT"{DOWN} LOAD A LIST
       (S/L)?"
GD 37 GETA$:IFA$<>"S"THENIFA$<
      >"L"THEN37
HK 38 IFA$="L"THEN150
BQ 40 PRINTCHR$(147)
CQ 50 X=X+1:INPUT" TO DO";I$(X
      )
PF 60 IFI$(X)=""THENX=X-1:GOTO
      80
BF 70 GOTO40
FM 80 PRINT
KK 90 FORT=1TOX:PRINTI$(T):NEX
      T
GC 100 INPUT"{DOWN}NAME OF LIS
       T TO SAVE";L$:IFL$=""TH
       ENEND
PA 110 OPEN1,8,1,L$
QA 120 PRINT#1,X
FR 130 FORT=1TOX:PRINT#1,I$(T)
       :NEXT
QJ 140 CLOSE1:END
QM 150 INPUT"{DOWN}NAME OF LIS
       T TO LOAD";L$:IFL$=""TH
       ENEND
PF 160 OPEN1,8,0,L$
PG 170 INPUT#1,X
QD 180 PRINT
MQ 190 FORT=1TOX:INPUT#1,I$(T)
       :PRINTI$(T):NEXT
SH 200 CLOSE1
```

❐

COMMODORE 64/128

PUBLIC DOMAIN SHAREWARE PROGRAMS

CALL OR WRITE FOR FREE DESCRIPTIVE CATALOG OF COMMODORE 64/128 PUBLIC DOMAIN & SHAREWARE SOFTWARE OR SEND $2.00 FOR DESCRIPTIVE CATALOG AND SAMPLE DISK. ADULT SOFTWARE LISTING AVAILABLE TO THOSE OF LEGAL ADULT AGE.

DISKS O'PLENTY INC.
8362 PINES BLVD., SUITE 270
PEMBROKE PINES, FL 33024
(305) 963-7750

Circle Reader Service Number 253

143 WILD WESTERN PRINT SHOP DESIGNS,
90 GRAPHICS, 42 BORDERS & 11 FONTS.
Gunfighters, Cowboys, Indians, Horses, Cattle, Bull Riders, Brands, Wagons, Saddles, Tack, Cutting, Indian Symbols, Wagon Wheels, more.
HAVE A WESTERN HOLIDAY PARTY!

$24.95 + S/H $4.00 in US. WA res. $1.95 tax
PLUS S/H APO, FPO, AK, HI $6.00 ● UK $12.00 ●
● AUSTRALIA $16.00 ● CANADA $5.00 ●
● PAYMENT IN USA FUNDS ●
SPECIFY C64 or IBM 5.25 or 3.5 Disk
CALL NOW 509-276-6928 FREE info.
HORSE FEATHERS GRAPHICS
N. 27310 Short Rd., Deer Park, WA 99006

Circle Reader Service Number 234

WHEN YOU CAN'T BREATHE,

NOTHING ELSE MATTERS.™

Help the
American Lung Association
fight lung disease.

AMERICAN LUNG ASSOCIATION®

Space contributed by the publisher as a public service.

RECORD FILER I
FOR BUSINESS OR PERSONAL USE.
Our easy to use Q Printer File Maker lets you enter your own printer's code or use as is with an Okimate 20 or Okimate 180 printer. Standard or Italic print.

Q ENTERPRISES
SOFTWARE
P.O. BOX 77123
WASHINGTON, DC 20013-7123

*Record Keeper =202 characters per record. Disk record capacity 1541=570; 1571=745. ** Record Printout 1 or 2 columns. ***Mail Label Printout 1, 2, or 3 columns. NO SET-UP-BOOK/MANUAL NEEDED BUILT-IN INSTRUCTIONS-ALL YOU DO IS TYPE. Write-Read-Edit-List-Print-Delete; Fast Search by 4 methods/6 types + 'Unique" Search searches and/or print from any set of unique letters in record. CORRECTION Routine restores files/limited power safeguard PRINTOUT BY DATA FROM ANY OF 9 FIELDS. FIELD/CHARACTER SIZE; Name/32 Address/32 City/25 State/20 Zip/10 S.S or I.D./11 Phone #/12 Remark 1/30 Remark 2/30 total 202 Characters Screen for Color or Black and White. C64/128 ONLY!
NOTHING HIDES FROM RFI - RELAX - LET RFI DO THE WORK FOR YOU!! *BUILD A LIBRARY OF LIST DISKS WITH RFI.*
Cost = $39.95 + $4 S/H USA; Canada and Mexico + $6 S/H; Overseas + $10 S/H. Check or Money Order Only! 2 to 5 weeks delivery.

Risers
And
Sliders
R&S

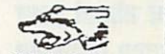
Fast Action Arcade Style Game for the Commodore 64/128+1541

$24.95 plus $3 Shipping and Handling in the U.S.A.
S/H in Canada $5 and $10 for all others.
— American Currency Only —

Send Check or Money Order to:

MicroStorm Software®
Box 1086, Sidney, MT 59270

Circle Reader Service Number 289



COMPUTER REPAIR
C-64: $40.00 **1541:** $54.95 **64C:** $50.00
1541-II: $64.95 **C128:** $64.95 **C128D:** $74.95
1581: $64.95 ETC.....
WE ALSO REPAIR IBM Clones, Sega, Genesis, Nintendo

For more info call: **BEAR TECHNOLOGIES**
Computer Sales, Service & Repair
1005 McKean Street, Philadelphia, PA 19148
215-336-5295 1-800-755-5295

Circle Reader Service Number 152

DIGITIZE PHOTOS ON DMP PRINTER!
•C64 Scan-On-Printer System: 1-7 "dot" sampling covers stamp to page-size photos - ENLARGE! REDUCE! Position on Page!
•Full "Exposure" and "Contrast" control! "DARKLESS DARKROOM!"
•Make "STAMPS" (w/perfs!) to 8" x 9.6" Hard Copy - captioned!
•Triple-Pass Printing blends dots on Full-Feature printers!
•Convert to DOODLE! Transport to GEOS - FGM - other Systems!
•Fiber-optic Link Fits moving print heads - USER port control!
•Low Cost ($69.95 up)! DemoDisk: $5; Samples + Info: LONG SASE
KALTEK - ADJUNTAS, PUERTO RICO 00601-0971

Circle Reader Service Number 124

SUPER MARIO BROS™ FOR THE C-64/128!

This fantastic PD version boasts 32 worlds, dazzling graphics and awesome sound! 37 OTHER TOP QUALITY GAMES are included on two disks! At 32 cents a game, this is a bargain a true game lover can't pass up! To order, send your return address & $9.00 for each Game Pack plus $3 postage and handling to:

PowerDisk • 6813 Lotus Way, West Jordan, UT 84084

™ Super Mario Bros. is a registered trademark of Nintendo.

MACHINE LANGUAGE

Jim Butterfield

SQUIGGLE ARRAY

Let Squiggle wander about your screen drawing lines while you learn about arrays.

The earliest Commodore computer, PET 2001, was shipped with a tiny program called Squiggle. Squiggle, written in BASIC, draws a wandering line around the screen. We can rewrite this program in machine language and learn a little about arrays as we do so.

Depending on whether it is going up, down, left, or right, the line is drawn with character 221 or 192, a vertical or horizontal bar. You'll find these on the keyboard as the shifted - and * keys. When the line randomly changes direction, one of the corner graphics, such as Commodore-A, is used to make a continuous line.

We use a table to decide which graphics character to print. The following 4 × 4 tables (one in decimal and the other in hex) map the previous or old direction against the new direction of the squiggle.

New (decimal)				Old
Up	Down	Left	Right	
222	0	176	174	Up
0	221	173	189	Down
189	174	192	0	Left
173	176	0	192	Right

New (hex)				Old
Up	Down	Left	Right	
DD	00	B0	AE	Up
00	D0	AD	BD	Down
BD	AE	C0	00	Left
AD	B0	00	C0	Right

Here's how to read the above table or two-dimensional array. If we're going up and want to continue to go up, we should print character 222. We can't go directly from up to down. The 0 signals an illegal direction change. If we're going up and want to go left, we must print character 176, that code for the Commodore-A key combination.

Our table has four rows and four columns, each numbered 0–3. The previous direction sets the row number. Multiply it by 4 and add the new direction (column), and you've reached the right spot in the table. We can multiply by 4 with two left-shift commands; it's handy to have a power-of-2 column count.

Two more things help make the job easy. First, each table entry fits within a single byte. And since the whole table fits within 256 bytes, we can reach any entry with simple indexing, rather than having to use indirect addressing.

After we print the selected character, we must move the cursor in the appropriate direction. Which way? The program reads a one-dimensional array (a list or vector) that looks up the cursor movements associated with certain character codes: cursor up, down, left, and right for characters 145, 17, 157, and 29, respectively.

We'll get pseudorandom numbers by reading consecutive bytes of ROM. Let's track the program flow. Detailed code is not given here; for a closer look, run the program and disassemble the machine language code.

The program is poked into memory starting at hexadecimal $2000, decimal 8192. The table is located at $2073. You can see it in BASIC lines 190 to 220. Behind it is the list of cursor movements, which will be placed at $2083.

Clear the screen and move the cursor into the screen area. Set random number tracking to ROM address $C000. Set the initial direction to up, code 0. Store this at address $2200.

At $2021, the program is ready to start work on our fake random value. A value from 0–3 sets our new random direction. Each ROM location can give us four such values, two bits at a time. We extract the byte from ROM, store it away at address $2201, and hack off two bits. This give us the random value for the new direction, which we store at address $2202.

The old direction is stored at $2200; the new at $2202. Time to look up our 4 × 4 table to get the printable character. A 0 would signal an illegal direction.

Multiply previous direction by 4 (two ASL commands). Add the new direction; in this case, a logical OR will do the job just as well. The result, transferred to the X register, gives the offset from the start of the table at $2073. Simple indexing will grab the character we need.

```
2033 LDA $2200
2036 ASL A
2037 ASL A
2038 ORA $2202
203B TAX
203C LDA $2073,X
203F BNE $2049
```

If the character from the table is a value other than 0, we leap ahead and print it. Remember, 0 signals an illegal direction, meaning the line wants to double back upon itself. In this case, we'll just tell it to continue in the direction that it was traveling, or in computer language, set the new direction to equal the previous direction.

```
2041 LDA $2200
2044 STA $2202
2047 BPL $2033
```

Note that the above BPL always branches. Can you see why?

At $2049, the character is printed, followed by a cursor left. We go to our second array to send the cursor in the right direction. Incidentally, we also set the previous-direction value to the new-direction value.

The Run/Stop key is checked at 205D. A little work to set up the next fake random value, and we loop back.

The program ends when we scan past the end of ROM or when the Run/Stop key is pressed.

Squiggle runs on virtually all Commodore 8-bit machines but doesn't behave quite the same on each. The 128, for example, cheerfully opens up space on the screen when the line runs off the right-hand side. Of course, the ROMs are different in each computer, too.

You'll quickly discover that ROM reading isn't the finest way to generate random values. Many 0 values produce lots of Up commands, and the line will often bump uselessly against the top of the screen. You'll see distinctive movement patterns as the program scans through repetitive parts of ROM.

Machine language Squiggle runs several hundred times faster than its BASIC forebear. Sixteen thousand moves will take place in less than a minute. That's too fast for easy viewing, so you might like to try your hand at slowing it down so that you can see the line moving. Another possible project would be to add code to keep the wiggling line from trying to run offscreen.

Here's the BASIC listing for Squiggle to get you started. Once the program pokes the machine language code into place, Squiggle takes off.

```
PD 100 DATA 169,147,32,210,255
       ,162,10,169,17,32,210,2
       55,169,29
XA 110 DATA 32,210,255,202,16,
       243,169,0,133,253,169,1
       92,133,254
KF 120 DATA 162,0,142,0,34,160
       ,0,177,253,141,1,34
MM 130 DATA 78,1,34,78,1,34,41
       ,3,141,2,34,173,0,34
BB 140 DATA 10,10,13,2,34,170,
       189,115,32,208,8,173,0,
       34
GS 150 DATA 141,2,34,16,234,32
       ,210,255,169,157,32,210
       ,255
XP 160 DATA 174,2,34,142,0,34,
       189,131,32,32,210,255
RR 170 DATA 32,225,255,240,16,
       173,1,34,200,192,4
CE 180 DATA 144,190,230,253,20
       8,2,230,254,208,175,96
AE 190 DATA 221,0,176,174
GK 200 DATA 0,221,173,189
HM 210 DATA 189,174,192,0
EM 220 DATA 173,176,0,192
GC 230 DATA 145,17,29,157
BE 280 PRINT "SQUIGGLE!"
QJ 300 FOR J=8192 TO 8326
DS 310 READ X:T=T+X
DD 320 POKE J,X
PP 330 NEXT J
FM 340 IF T<>15825 THEN STOP
MP 400 SYS 8192
```
□

I'd like to walk the dog, if my knees will let me.

Don't wait until your bad days outnumber your good days before you call the Arthritis Foundation. **1-800-283-7800.**

ARTHRITIS FOUNDATION®
Your Source for Help and Hope®

STILL AVAILABLE

MAPPING THE Commodore 64 & 64C

Sheldon Leemon

A comprehensive memory guide for beginning and advanced programmers of the Commodore 64 and 64C personal computers, including a complete memory map of GEOS.

A COMPUTE! Books Publication $18.95

The classic best-selling Commodore 64 reference guide. *Mapping the Commodore 64 and 64C* is a comprehensive memory guide for beginning and advanced programmers.

To order your copy send $18.95 plus $2.50 for shipping and handling (U.S., $4 to Canada and $6 other) to COMPUTE Books, c/o CCC, 2500 McClellan Ave. Pennsauken, NJ 08109. (Residents of NC, NJ, and NY please add appropriate tax; Canadian orders add 7% Goods and Services Tax.) All orders must be paid in U.S. funds drawn on a U.S. bank. Orders will be shipped via UPS Ground Service. Offer good while supplies last.

PROGRAMMER'S PAGE

Randy Thompson

INTERFACE AGONY AND ECSTASY

If you've ever struggled with Commodore printers and interfaces, here's some good advice sent in by a reader.

This month I'm reprinting a letter sent in by Jack Blewitt of Rockford, Illinois, that should interest anyone who has ever struggled with Commodore printers and interfaces. I've edited it slightly for size.

"The May 1993 issue of Gazette's 'Feedback' column helped a reader with a printer underlining problem. As comprehensive as the answer was, it did not mention one of the prime reasons many printer problems occur: peculiarities of specific printer interfaces. Even if you don't have one of these interfaces, you should be aware of the problems they may cause just in case you ever decide to write a program for others to use.

"The Cardco-B, Cardco+G, Super-G, and Gee-Whiz interfaces were designed to emulate both Commodore- and Epson-compatible printing modes. In these emulation modes, the interface translates many special printer commands before passing them along to the printer. Some printer commands are ignored when the interface doesn't understand them. Because you may want to use a printer feature that the interface doesn't directly support, you can use the OPEN command's secondary address (SA) to tell the printer interface to pass printer commands through unaltered. Even when the interface's DIP switches are set to transparent mode, certain SA values allow you to override that setting.

"For example, to ensure that your printer commands reach the printer, you should use an SA of 0, 1, 7, or 8 when you want to send Commodore-specific printing commands such as Reverse, Expanded, 7-pin graphics, and so on. If you want to use Epson-specific printer commands for such things as underlining or 9-pin graphics, send them through a printer channel that was opened with an SA of either 4 or 5 (depending on your desired line spacing). Remember, there is no reason you can't have more than one printer channel open at the same time—each with its own unique SA value—so printer commands can be mixed if necessary.

"If your word processor doesn't allow you to change the SA to access your printer, as with The Write Stuff, you might consider locking your interface into transparent mode before loading the program. With the Cardco and PPI interfaces, you do this by adding a 20 to the SA value. For example, by executing the following command prior to running your word processor, you lock the interface in Epson mode.

```
OPEN 4,4,25: PRINT#4,"EPSON
MODE LOCKED": CLOSE 4
```

"Please note that many printers, such as Legend and Siekosha printers, use the SA for their own special purposes. Since it is impossible for programmers to test their code on every type of printer/interface, you must patiently experiment with SA values.

"Another handy tip to remember is to use the CHR$( ) function instead of the actual letter designates when sending printer commands. If your interface's ASCII translation is turned on, an uppercase *E* might be converted to lowercase, thus changing your printer command to something that might not work. By sending commands such as the following, you should have much greater success with printer codes.

```
PRINT#4,CHR$(27);CHR$(69):
REM CHR$(69) equals E
```

"Each interface has its own special set of printer codes and so do most printers. Check your manual anytime a program doesn't produce the results you anticipate. Be particularly careful when preparing to print graphics. A Star NX-1000 printer is not the same as an NX-1000C (C for Commodore version), and so on. Even with the same printheads, it is not possible to activate the 9-pin graphics on a Commodore version of the same printer.

"If you want your graphics to print on a computer with the Hot-Shot+ interface, never use the <ESC><"*"> Select Graphics Mode commands. Hot-Shot+ works all right at 80DPI, but it balks if you attempt to print at 120DPI in this mode. This is probably why so many Hot-Shot+ owners went bananas trying to make Paperclip Publisher print. Hot-Shot+ uses <"*"> as a proprietary command and will not pass it to the printer. Using the interface's K, L, Y, and Z equivalents works with all interfaces to change graphics density and prevents the above catastrophe.

"It is the responsibility of Commodore users to read and understand the features of their equipment. There are just too many hardware configurations out there for programmers to meet the needs of everyone. If you find that you need specific help, check with your local Commodore user's group to see if an expert there is using the same printer and/or printer interface you are. And while you're getting help, be sure to share your own discoveries. Good Commodore support is getting hard to find."

If you have a good printer tip, send it to Gazette. We'll share it with our readers. ☐

EASY TO USE!

Gazette Index

Everything's included!
Features, games, reviews, education/home applications, programming, bugswatter, feedback, and columns!

A superb interface includes pull-down menus, help screens, and keyboard, joystick, or mouse control. Features include super-fast searching and sorting capabilities. An options screen allows you to choose text colors, drive number, and input device. And there's **full documentation on disk.**

Choose from three modes of operation—*browse* for quick scanning, *view* for detailed information and descriptions, and *edit* for adding items from upcoming issues—and print to any printer. There's even a turbo-load option for maximum disk-access speed.

ORDER YOUR GAZETTE INDEX TODAY!
(MasterCard and Visa accepted on orders with subtotal over $20.)

To order, send $7.95 per disk, the quantity of disks ordered, check or money order,* your name and complete street address:

Gazette Index
324 West Wendover Avenue
Suite 200
Greensboro, NC 27408

*Please add $2 shipping & handling ($5 foreign) for each disk (residents of NC, NJ, NY please add applicable sales tax; Canadian orders, add 7% goods and services tax).

All payments must be in U.S. funds. Please allow 4 weeks for delivery.

C64/128 PUBLIC DOMAIN SOFTWARE

REQUEST FREE CATALOG or send $2 for sample disk and catalog (REFUNDABLE). Categories include education, utilities, games, business, PRINT SHOP graphics, pre-tested programs and more. Rent for 75¢ or buy as low as $1.00 per disk side or for 80¢ for 70 or more. $20 order gets 4 free disks of your choice.

NEXT DAY SHIPPING! SINCE 1986

MasterCard **CALOKE INDUSTRIES (Dept. GK)** VISA
PO BOX 18477, RAYTOWN, MO 64133

Circle Reader Service Number 181

DEPENDABLE SERVICE FOR YOUR COMMODORE!

C-64, 1541, C-128, or 1571: ***FAST*** *TURNAROUND!*

$25.00 PLUS PARTS

Send computer* or drive with name, address, phone, & describe problem. We'll call with parts estimate, then repair and return to you insured by UPS. Payment can be COD or VISA, M/C. Minimum charge, estimate only is $20. * Include power supply.

AUTHORIZED COMMODORE SERVICE CENTER
★ ★ ★ ★ ★
90 DAY WARRANTY ON ALL REPAIRS

TYCOM Inc.
503 East St. Dept. C
Pittsfield, MA 01201
(413) 442-9771

Circle Reader Service Number 242

Upgrade your Commodore system

Refurbished Hardware

MONITORS	DRIVES	OTHER
1701- $219	1541- $ 99	C64- $99
1702- $239	1541c- $109	64C-- $119
1802- $259	1541-II-$139	128- $179
1802D-$279	1571- $169	128D-$329
1902- $299	1581- $179	1670-$49
1902A $319	1001SFD$139	1660-$29
1084- $329	1530 Datasette-$39	
1084S $349	Buscard-II- $59	
BOOKS$10-15	Iterfaces- $35-$75	
SOFT $5-20	512k Ram Expander$179	

Ask for anything, we might have it

J.P. PBM PRODUCTS BY MAIL
N.Sheridan Mall Postal Outlet,Box #60515
DOWNSVIEW, ONTARIO, M3L 1B0
Allow 4-6 weeks for delivery.
Cataloge disk on 64 format $2

New APROTEK modems
64/128/Amiga-2400 Baud- $119
User switch-$44 Convert-A-Com-$45

New CMD accessories
JIFFYDOS 64/128 "SYSTEM"- $85
JIFFYDOS 64sx/128D "SYSTEM"- $95
128 kenal-$65 64 kernal- $49
JIFFYDOS DRIVE ROMS- $45
Ramlink & Ramcard-II(Ok) & Battery $369
Ramlink base-$239 Ramcard-II-$109
RL Battery-$29 1Meg-$69 4Meg-$219
NEW DRIVES! FD2000-$319 FD4000-$419
R.T.Clock--+$25 ED disks(10)- $105
Send CDN funds, USA 15%exchange
15 Day warranty on refurbished goods
TAX-Canada+7%GST,Ontario Res.+8%PST
SHIPPING-(-$25=$4,-$100=10%,-$200=8%
-$499=7.5%,$500+=6%), USA=15%

REU users: Battery Back any 17xx, or GEORAM, with the **BBU**. Use with GEOS (V1.3 up), RAMDOS or other programs that use REUs. Great for BBS. No heavy power supply needed.
GEOS users: BBGRam, Battery backed RAM for GEOS 2.0. A fast, reliable alternative to mechanical drives. Supports all drive types, multiple partitions and alternate DESKTOPs.

PERFORMANCE PERIPHERALS, Inc.
5 Upper Loudon Road, Loudonville, NY 12211.
US orders, literature: 800-925-9774. Tech support, orders, FAX: 518-436-0485.
BBU $59, BBGRam 512K $89, BBGRam 1M $119, BBGRam 2M $159.
US S&H $6. US COD $4. Canada & Mexico S&H $10. Other countries S&H $19.
30 day money back guarantee. 90 day warrantee. Master Card / VISA welcome.

Circle Reader Service Number 153

Roy Stanek

HUGS ARE FREE, TOO

WORKING
MIRACLES
EVERY DAY

THE SALVATION ARMY
Sharing Is Caring

GEOS

Steve Vander Ark

A GEOS USER'S GUIDE TO GENIE

If you've read my columns, you know that I'm excited about QuantumLink. I spend quite a lot of time there, poking around the libraries for files to download or chatting with other users over a game of bingo. As I've said before, if you're a Commodore user, you should be on Q-Link. There will never be another service like Q-Link with so much to offer 64 users.

But Q-Link isn't the only game in town. One of the more popular online services these days is GEnie. GEnie supports any type of computer, from the Apple II to mainframes, by sending and receiving ASCII text rather than graphics.

GEnie is an online service that has a lot to offer Commodore and GEOS users.

GEnie has a special area devoted to our machines that's called the 64/128 Flagship. It's run by John Brown, the fellow behind Parsec and *Twin Cities 128 Magazine.* In the Flagship, John maintains message, libraries, and so on.

The resident GEOS expert is a programmer and writer named Robert Knop; his name online is R.KNOP1. He visits the Flagship regularly, making sure GEOS users get the help and information that they need.

One way GEOS users can get all this help and information is by visiting the bulletin board area. There is a whole category devoted to GEOS messages. Subject areas include converter programs, mega fonts, font editors, geoPublish, gateWay, and geoProgramming in geoBASIC or geoProgrammer. You can read the messages, add your own responses, or ask questions of your own.

You can meet other people in the evenings in the Real-Time Conference area. Here you chat live with other Commodore users from around the country. You can often find John Brown himself, under the name C128-JBEE. Look for Doug Cotton from Creative Micro Designs, too.

There are no officially scheduled GEOS chat times, nor is there a separate GEOS chat area as there is on Q-Link. Rob Knop, however, hosts the conference area on Thursday nights. That's a great time to get GEOS information.

Of course, one of the more popular areas in the Flagship is the file library, which is full of great Commodore programs just waiting to be downloaded. There are 47 different libraries, each containing programs devoted to a particular aspect of Commodore computing. You can find terminal programs in library 6, for example, or 128 graphics in library 28. There are games galore, lots of SID music files, graphics, and utilities for anything you can imagine. Every week or so, John posts a list of the best from the latest crop of files. This makes your hunt for the latest and best programs a little quicker and easier.

As you might guess, there are several libraries for GEOS files. Library 35 is GEOS applications and utilities, number 36 is for GEOS graphics, and number 37 is for GEOS fonts. Kent Smotherman, Irv Cobb, and other crack GEOS programmers regularly upload their programs here.

Some of the more recent uploads in the applications library include an 80-column version of the popular geoWrite utility Toolkit and a disk directory printer which makes listings just the right size for 1581 disks. There's also a blank keyboard overlay done in geoPaint that you can customize for your own needs. Another user who is handy with his Handyscanner has been uploading scanned photographs to the graphics library.

Over in the font library you'll find some very useful fonts, good for sensible word processing. There are also a few crazier ones such as Mega Valdez, which looks like it's dripping oil.

If you're interested in coming aboard the Flagship on GEnie, be prepared to spend a little money, especially at first. It can be more than a little confusing as you try to figure your way through the extensive menu system. You'll be paying by the hour while you wander around, so plan on a few large bills while you learn the ropes. The best way to learn anything is by doing it, and GEnie is no exception. Before long you'll be sailing through the menus like an expert. Believe me, gaining access to this source of help, information, and programs is well worth the cost.

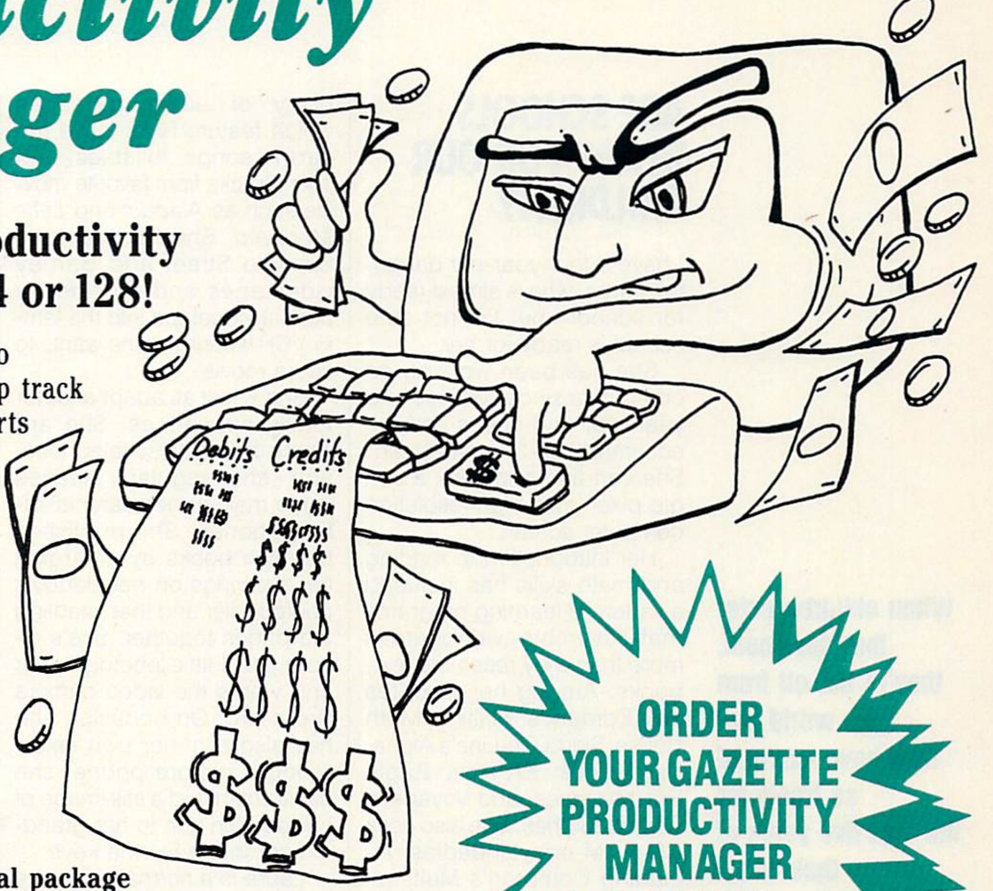
Here's how you can sign on to GEnie:

- Set your terminal software for half duplex (local echo) at 300, 1200, or 2400 bps.
- In the U.S. dial (800) 638-8369; in Canada dial (800) 387-8330.
- Upon connection, type *HHH.*
- At the *U#=* prompt, type *XTX99018,COMMRT* and then press Return.
- Have a major credit card or your checking account information handy.

When you sign on with the COMMRT password, that puts you on the Commodore users' mailing list, and it gives the Flagship credit for signing up a new user.

Once you're aboard, be sure to drop me a note. My screen name is S.VANDER-ARK. I'm always happy to answer questions and listen to comments! ❐

The Gazette Productivity Manager



Harness the productivity power of your 64 or 128!

Turn your Commodore into a powerful workhorse, keep track of finances, generate reports in a snap, manage your money in minutes—all with the *Gazette Productivity Manager!* Look at all your 64/128 *Productivity Manager* disk contains.

GemCalc 64 & 128—A complete, powerful, user-friendly spreadsheet with **all the features you'd expect in an expensive commercial package** (separate 64 and 128 versions are included). Most commands can be performed with a *single* keypress!

Memo Card—Unleashes the power of a full-blown database without the fuss! **Nothing's easier**—it's a truly simple computerized address file. Just type in your data on any one of the index cards. Need to edit? Just use the standard Commodore editing keys. Finished? Just save the data to floppy. What could be easier?

Financial Planner—Answers all of those questions concerning interest, investments, and money management that financial analysts charge big bucks for! You can plan for your children's education and know exactly how much it will cost and how much you need to save every month to reach your goal. Or, decide whether to buy or lease a new car. Use the compound interest and savings function to arrive at accurate estimates of how your money will work for you. **Compute the answer at the click of a key!**

DON'T MISS OUT ON THIS POWERFUL WORKHORSE!

ORDER YOUR GAZETTE PRODUCTIVITY MANAGER TODAY!

(MasterCard and Visa accepted on orders with subtotal over $20).

☐ **YES!** Please send me ___ *Productivity Manager* disk(s) ($14.95 each).

_______ **Subtotal**

_______ **Sales Tax (Residents of NC and NY please add appropriate sales tax for your area. Canadian orders, add 7% goods and services tax.)**

_______ **Shipping and Handling ($2.00 U.S. and Canada, $3.00 surface mail, $5.00 airmail per disk.)**

_______ **Total Enclosed**

__ **Check or Money Order** __ **MasterCard** __ **VISA**

Credit Card No. ______________________________

Signature ______________________________ **(Required)**

Daytime Telephone No. ______________________________

Name ______________________________

Address ______________________________

City ______________________________

State/ Province ______________ **ZIP/ Postal Code** ______________

Send your order to Gazette Productivity Manager,
324 W. Wendover Ave., Ste. 200, Greensboro, NC 27408.

D'IVERSIONS

Fred D'Ignazio

ARE SCHOOLS READY FOR OUR CHILDREN?

I have a four-year-old daughter, Laura, who is almost ready for school—but I'm not sure school is ready for her.

She has been working on computers since she was one year old, and she is now an accomplished "mouseketeer." She can find and click a single pixel on a high-resolution computer screen.

When children enter the classroom, they're cut off from the world that they have explored so freely for the first five years of their lives.

Her introduction to reading and math skills has included a variety of learning programs that resemble videogames more than they resemble textbooks. Among her favorites are Edmark's Millie's Math House, Sierra On-Line's Alphabet Blocks, EA*Kids' Eagle Eye Mysteries, and Voyager's AmandaStories. She also uses CD-ROM encyclopedias, including Compton's Multimedia Encyclopedia; National Geographic's Mammals; and Discis' and Brøderbund's CD-ROM storybooks such as Scary Poems for Rotten Kids, Just Grandma and Me, and Arthur's Teacher Trouble.

Laura is comfortable with computers, but she's not a toddler nerd. In fact, she spends only a few minutes a day at the computer. Like any four year old, most of her "work" takes her outdoors and into the company of other people.

She spends a couple of mornings a week at day care. She attends toddler play gym at the YMCA, and she goes to dance class and art class. In the summer, she attends various camps, including swim camp and dinosaur camp.

Like other kids of her generation, Laura is a born button pusher. She has her own little Strawberry Shortcake boom box and her own Fisher-Price cassette player to play a library of audio cassettes which feature Raffi "save the earth" songs, lullabies, and soundtracks from favorite movies such as *Aladdin* and *Little Mermaid*. She has her own Sesame Street and Barney videotapes and confidently pops a videotape into the family VCR whenever she wants to see a movie.

She is just as adept at other family appliances. She answers the cordless telephone, and she regularly leaves voice mail on her parents' office phones. She publishes her own books by enlarging her drawings on her daddy's photocopier and then stapling the pages together. She's also a good little photographer and works the video camera like a pro. On occasion she has also sent her own faxes. Using a picture phone, she has transmitted a still image of her devilish grin to her grandmother in the Florida keys.

Laura is a normal kid in the gadget-rich 1990s. That is why I worry about her going to school next year. Laura's world is saturated with little electronic gadgets, but school is gadget-deprived.

As a kindergartener Laura will be lucky if she has occasional access to a computer. She will have little chance to see movies, listen to tapes, or receive or make phone calls. If she does see a computer or other device, it will probably be in a tightly supervised situation in which she is told to perform narrowly defined tasks.

This would contrast sharply to her prior experiences in which she has had the time and trust to explore the computer or any other machine. At school things are certain to be quite different.

Some schools are now experimenting with what they call IEPs, Individualized Education Plans. But this is precisely what preschool kids experience before they ever reach school. Kids who are lucky enough to have the advantages that Laura has spend their days trooping all over the community with parents, babysitters, and nannies, attending courses at a variety of community organizations. They experience a well-rounded, highly satisfying version of school that takes place entirely outside of school walls.

Then these same kids turn five, and they enter school. They cross the threshold into the classroom, and they spend several hours each day cut off from the world they have explored so freely the first five years of their lives.

At home, if Laura wanted to contact her parents or grandparents, she would call them. If there were an emergency, she would dial 911. She has been taught that four years old is not too young to take charge of her life and to "reach out and touch someone."

At school, if Laura wanted to contact her parents or grandparents, she would be told this was improper. She would learn the value of patience. And isolation. And powerlessness. She would learn that five years old is not nearly as old as she had believed.

And what about children less advantaged than Laura? They never have the opportunity to experience the richness of the world—either personally or electronically—and never have the opportunity to make decisions on their own. Then they turn five and go directly from their disadvantaged world into a disadvantaged school.

(Next month, we'll look into new educational strategies which turn Laura's classroom into an open system—a classroom without walls—where children are able to practice skills and use tools they will need in tomorrow's world.) ❐

SUPER SCREEN FONTS

By Rick Kane

Have you ever noticed how nice text looks on a PC clone with an EGA display? The characters are clear and crisp, and they're also smoother and fuller than the Commodore character set. This is because the PC clone characters have twice the vertical resolution! It takes 16 bytes to define one of these characters instead of the 8 bytes per character we're used to looking at. Seems kind of unfair, doesn't it?

Well, we don't have to put up with it anymore. While it isn't generally known, the Commodore 128 is capable of using the same 8- × 16-pixel character sets as those high-priced PCs. Actually, a 128 can use up to 32 scan lines per character, but I'm getting ahead of myself! It's really no secret, but part of the trick involves using the 80-column (8563) chip's interlace mode, which results in twice the usual number of vertical pixels in the same space.

Not So Fast

The backbone of this entire capability is a feature known as interlace sync and video mode. Never mind the jargon. Video is displayed as two fields, one for even-numbered scan lines and one for odd-numbered. This is what we mean by the term *interlaced.* First one field is displayed, and as it fades, the other is displayed in the course of 1/30 second. If not for this setup, your eyes would see the top of the screen fade before the next frame could be drawn, resulting in less pleasing, and probably more tiring, television.

In normal display mode, most computers display only one field; the other is left blank. This is fine for most purposes because the characters displayed are very sharp and there is no clarity problem in skipping the alternate field. By selecting interlaced mode, however, the computer can display twice as many dots vertically.

One additional note here: The much-talked-about flicker associated with interlace mode on most computers happens because computers still display only one field every 1/30 second on alternate scan lines. True video and broadcast television display every 1/60 second. This means one field has a much longer time to fade before the other field is displayed. A long-persistence monitor has phosphor on its CRT, which takes longer to fade out and helps to minimize the flicker.

Uses for Interlace Mode

Interlace can be used in a number of ways. One use is making super-high-resolution graphics, such as those possible with I Paint. One drawback is that the resulting 640- × 400-pixel screen requires 32000 bytes for just a monochrome graphic, far more than the 16K supplied with the original 128. (The 128D comes with 64K of video RAM.) Interlace can be invoked in text mode, however, and no extra memory is required.

If you have PaperClip, the Pocket series, Dialogue, Desterm, or SpeedScript 128 with SpeedSpell, you may have used a 50-row display mode. In this mode, these programs display 50 rows of 80 8 × 8 characters—nearly a full page of text. Now 4000 bytes are needed for screen memory, plus 4000 for color (attributes). Along with the 8K devoted to character definitions, this fits nicely into the 16K provided. An 80- × 50-row mode would also be handy in program editing, but it would require extensive rewriting of the screen editor, which would make this mode incompatible with most existing software.

As I said, there is another way. Thanks to the flexibility of the 8563, we can switch to 8 × 16 characters. This is just like the EGA characters of PC clones. This way, the screen editor still works with 25 rows of characters. It doesn't care how you've defined the characters. All it's concerned with is putting the right character code at the right position on screen. The 8563 takes care of the actual video rendition of the characters, much as the VIC chip does for 40 columns. As long as the program in question doesn't redefine the characters or reset the 8563, it will work just fine. And as you'll see, just a few modifications to SpeedScript 128 let you use your favorite word processor with more clarity than ever before!

A Little Demo

To get our initial 8 × 16 set, we'll use the 8 × 8 character set as a starting point, doubling each byte (scan line). So, if the original data was ABCDEFGH, the new character would be AABBCCDDEEFFGGHH. At this point, the skeptics are asking, "Why do this? Won't the result look essentially like the noninterlaced 8 × 8 characters?" Well, yes and no. Type in Demo 8 × 16 and run it for a demonstration of 8 × 16 characters and a hint of the possibilities for a new character set.

Typing It In

Demo 8 × 16 is written entirely in BASIC. To help avoid typing errors, enter it with The Automatic Proofreader. See "Typing Aids" elsewhere in this section. Be sure to save a copy of the program before you attempt to run it.

The redefined characters in this demo give you some idea of the clarity involved with this mode. Not only do the characters look smoother, they allow more headroom between lines of text, giving a much cleaner overall look. After you run the demo, you can leave things as they are or reset the 128 by typing *SYS 57721: SYS 65378.*

Building Characters

SuperFont Editor lets you take full advantage of this mode's capability. It allows you to create your own 8 × 16 superfont, although it can be used to edit 8 × 8 fonts as well. An accompanying program provides the ability to quickly load your creations directly to the 80-column character definitions.

SuperFont Editor is a full-featured editor, with commands for copy, paste, reverse, range copy, and more. All this is possible on any 128, not just those with 64K of VDC RAM.

In accomplishing its assigned tasks, SuperFont Editor uses the power of BASIC 7.0 in some instructional ways. It uses both the underused WINDOW command (to give a more pleasing environment) and the little-known and nearly undocumented RREG command (one of the most powerful commands in Basic 7.0). SuperFont Editor also shows some other interesting features of the 8563, such as independent cursor control.

Typing More In

Program 2 is SuperFont Editor, the

main program. All Commodore control and color codes have been defined as variables to make it easier to type. Pay attention to spaces in quotes, because they affect the appearance of the screen.

Program 3, Autoheader.maker, is a program which creates the header for setting the screen to 8 × 16 and redefining the characters. After entering and saving the program, run it, and it will create a file that is called SFONT.AUTOHEADER. The superfont you create will be appended to this file later. Once again, use The Automatic Proofreader to enter these programs without typos.

Using SuperFont Editor

When you first run SuperFont Editor, you will be presented with the editing grid showing the first character of the first character set at the upper left. Below it, an information window shows the current character, its screen code, and the character set. At the upper right is a display of most of the commands available. In the lower right, the current character set is displayed.

First, let's talk about the function keys. Keys f1 and f2 are used to select the next higher or lower character in the set.

Press f3 to select a character by typing it in. You may press Ctrl-9 (reverse on) to edit the reverse image codes.

Press f4 to alternate between the uppercase/graphics character set (set 0) and the uppercase/lowercase set (set 1).

Press f5 to toggle 8 × 8 or 8 × 16 character mode. It doesn't do anything to the character set itself. With certain monitors, such as the 1902A and some 1084 series, the 8 × 16 mode will look fuzzy. If it does, press Alt-f5 to try 8 × 15 characters. Because of internal differences in some monitors, the characters should now look sharper.

Press f6 either to double the data in an 8 × 8 character set, giving a low-res 8 × 16 set to start from, or to restore the system character set. If you change back to 8 × 8 mode after doubling the character set, you will see just the top half of the 8 × 16 font. Everything still works; you just can't really read the screen.

Press f7 to load a previously saved 8 × 16 character set for further editing. You can get a directory by typing *$* for the filename. The No Scroll key holds the directory listing. If the name you want scrolls off the screen, press Stop to return to the filename query before the directory is finished.

Press f8 to save your work. This command saves the entire character set. It requires 33 free blocks on a disk.

Editing

Use the cursor keys to move around the editing grid. The Return key moves the cursor down one and all the way left. Full wrap is supported in all directions. The Home key takes you to the upper left, while Clr creates a blank character. The space bar toggles the pixel under the cursor on or off. The cursor doesn't advance on its own; you must move it yourself.

Use C to copy the current definition into a buffer, and use P to paste it in the place of a different character. This is very useful in quickly getting a start on similar characters. Press the Control key and 9 simultaneously to reverse the bit pattern of a character. This is useful after pasting a character to its reverse equivalent.

The # key can be used to enter a character by its screen code; this is particularly helpful for the comma, colon, and other characters which can't be entered from the 128's keyboard input routine.

Press O to access two additional options. Here, you can copy your normal characters to the reverse video characters within a set. This will save a lot of work! The second option lets you copy a range of characters from one set to the other. This is very flexible and fast.

To exit SuperFont Editor, press Run/Stop. A small red window just above the lower left info window will ask if you really want to exit. Press Y to confirm.

That's It

When you've finished creating and saving an 8- × 16-character font, you'll want to be able to load it in and select 8 × 16 mode painlessly. This is accomplished with the Sfont.autoheader program, the third program in this series.

You must append your font file to the end of the Sfont.autoheader, creating a file that can be run from BASIC. To do this, use the following command.

OPEN 15,DRIVE,15, "C0:FILENAME=SFONT.AUTOHEADER,FONTFILE":CLOSE15

FILENAME is the resulting filename, and FONTFILE is whatever you named the font file you wish to install. Now run the new program. Your display will be set to interlaced, and the 8- × 16-character set will be loaded into the 8563S character memory.

If you get the fuzzy display mentioned earlier, list the program. Change SYS 7220,15 to SYS 7220,14 and resave the program. Don't change the length of the BASIC line, or the program will not work.

You may want to adjust your screen colors to minimize the flicker. Lowering the contrast and brightness settings can help, too, or invest in one of the dark Plexiglass panels to fit over your screen.

That's all there is to it! Once you've become used to a superfont, you won't want to go back. You'll have to, though, in some cases. This mode is not compatible with programs that use 50-row display or preview. You must disable the 8 × 16 characters first, by typing *SYS 57721: SYS 65378.*

DEMO 8 × 16

```
XA 50 REM COPYRIGHT 1993 -COMP
      UTER PUBLICATIONS INTL L
      TD - ALL RIGHTS RESERVED
XA 100 REM 8X16 INTERLACED CHA
       RACTER DEMO BY RICK KAN
       E
ME 110 FAST:WR=DEC("CDCC")
HK 120 PRINTCHR$(147)CHR$(14)"
       8 X 16 INTERLACED CHARA
       CTER DEMO"
JP 130 PRINT:PRINT"IF SCREEN R
       OLLS OR IS FUZZY, PRESS
        SPACE"
RF 140 A=15:GOSUB500:PRINT"PRE
       SS ANY OTHER KEY TO CON
       TINUE"
AD 150 DO:GETKEYK$:IFK$<>" "TH
       EN EXIT
HJ 160 A=15+(A=15):GOSUB500:LO
       OP
CF 170 PRINTCHR$(145)CHR$(145)
       CHR$(27)"@":GOSUB1290:S
       YS4864
QB 180 PRINT:PRINTCHR$(2)"THIS
        IS THE STANDARD CHARAC
       TER SET:";TAB(50);"ABCD
       EABCDE
JJ 190 PRINTTAB(50);"ABCDEABCD
```

```
        E
RS 200  PRINT:PRINT"PRESS A KEY
        ...":GETKEYK$
DJ 220  PRINTCHR$(145)CHR$(2)"U
        SE SUPER FONT EDITOR TO
         MAKE FINER CHARACTERS:
        ";TAB(50);CHR$(142)"ABC
        DEABCDE"
BJ 230  PRINTTAB(50);"ABCDEABCD
        E";CHR$(14)
QG 240  GOSUB1480
FF 490  END
QM 500  SYSWR,1,36:SYSWR,3,8:SY
        SWR,A,9:SYSWR,A,11:SYSW
        R,A,23:SYSWR,A,29:RETUR
        N
HB 1280 :
QD 1290 A$="":RESTORE:I=DEC("1
        300"):READ A$:DO UNTIL
         A$="END":POKE I,DEC(A
        $):I=I+1:READ A$:LOOP:
        RETURN
EX 1300 DATA 20,0F,13,A9,20,85
        ,FA,A9,00,85,FB,85,FC,
        F0,19,A9
MF 1310 DATA 30,85,FA,A9,00,85
        ,FB,85,FC,F0,0D,A2,12,
        20,DA,CD
PA 1320 DATA 85,FA,E8,20,DA,CD
        ,85,FB,A5,FA,A2,12,20,
        CC,CD,E8
QP 1330 DATA A5,FB,20,CC,CD,A0
        ,00,20,D8,CD,99,00,14,
        C8,C0,08
PS 1340 DATA D0,F5,A5,FA,A2,12
        ,20,CC,CD,A5,FB,E8,20,
        CC,CD,A0
QK 1350 DATA 00,B9,00,14,20,CA
        ,CD,20,CA,CD,C8,C0,08,
        D0,F2,E6
ED 1360 DATA FC,A6,FC,D0,B6,60
        ,END
FK 1480 RESTORE 1500:SYSWR,36,
        18:SYSWR,16,19:FORI=0T
        O79:READA$:SYSWR-2,DEC
        (A$):NEXT
PH 1490 SYSWR,32,18:SYSWR,16,1
        9:FORI=0TO79:READA$:SY
        SWR-2,DEC(A$):NEXT:RET
        URN
PG 1500 DATA 00,00,10,38,6C,C6
        ,C6,FE,C6,C6,C6,C6,00,
        00,00,00
HA 1510 DATA 00,00,FC,66,66,66
        ,7C,66,66,66,66,FC,00,
        00,00,00
QE 1520 DATA 00,00,3C,66,C2,C0
        ,C0,C0,C0,C2,66,3C,00,
        00,00,00
XA 1530 DATA 00,00,F8,6C,66,66
        ,66,66,66,66,6C,F8,00,
        00,00,00
EG 1540 DATA 00,00,FE,66,62,68
        ,78,68,60,62,66,FE,00,
        00,00,00
JX 1550 DATA 00,00,00,00,00,78
        ,0C,7C,CC,CC,CC,76,00,
        00,00,00
HQ 1560 DATA 00,00,E0,60,60,78
        ,6C,66,66,66,66,7C,00,
        00,00,00
HP 1570 DATA 00,00,00,00,00,7C
        ,C6,C0,C0,C0,C6,7C,00,
        00,00,00
BP 1580 DATA 00,00,1C,0C,0C,3C
        ,6C,CC,CC,CC,CC,76,00,
        00,00,00
KP 1590 DATA 00,00,00,00,00,7C
        ,C6,FE,C0,C0,C6,7C,00,
        00,00,00
```

SUPERFONT EDITOR

```
PH 100 REM COPYRIGHT 1993 - CO
       MPUTE PUBLICATIONS INTL
        LTD - ALL RIGHTS RESER
       VED
DK 110 REM WRITTEN BY RICK KAN
       E
HJ 120 :
XH 130 TRAP 210
QH 140 FAST:GOSUB3000:GOSUB270
       :GOSUB390:GOSUB2010
CD 150 GOSUB1220:DO:DO:GETKEYK
       $:K=INSTR(MN$,K$):LOOP
       {SPACE}UNTIL K
DE 160 ON K GOSUB 1260,1290,13
       20,1350,1440,1220,1530,
       1040,1060,1120,1090,206
       0,2120,1850,1750,1590,1
       620,2330,1170,1680,1380
GK 170 LOOP
BB 180 END
PR 190 :
GJ 200 REM ERROR TRAP
DD 210 IF EL=1970 THEN RESUME
       {SPACE}NEXT:REM DIRECTO
       RY
FM 220 IF EL>1759AND EL<1950TH
       EN RESUME 1920:REM LOAD
       /SAVE
ES 230 GOSUB550:PRINTCS$LR$:IN
       PUT"EXIT Y/N";EX$:IFEX$
       <>"Y"THEN PRINTLB$CS$:G
       OSUB 1220:RESUME
AQ 240 PRINTLG$HM$HM$CS$E$"L"E
       $"N";:END
RA 250 :
GX 270 DIMD(15),C(15),D$(15),C
       $(15),PX$(2),PC$(1):WR=
       DEC("CDCC"):RR=DEC("CDD
       A"):WM=WR-2:RM=RR-2:VD=
       15:CO=0:CS=0
AG 280 E$=CHR$(27):DL$=CHR$(20
       ):IN$=CHR$(148):RT$=CHR
       $(29):LT$=CHR$(157):DN$
       =CHR$(17):UP$=CHR$(145)
       :CR$=CHR$(13):SP$=CHR$(
       32):HM$=CHR$(19):CS$=CH
       R$(147)
JF 290 LC$=CHR$(14):UC$=CHR$(1
       42):UL$=CHR$(2):UO$=CHR
       $(130):FL$=CHR$(15):FO$
       =CHR$(143):RV$=CHR$(18)
       :RO$=CHR$(146):FORI=0TO
       13:RR$=RR$+RT$:NEXT
AE 300 DB$=CHR$(31):LR$=CHR$(1
       50):DG$=CHR$(152):GR$=C
       HR$(153):LB$=CHR$(154):
       LG$=CHR$(155):YL$=CHR$(
       158):CY$=CHR$(159)
GK 310 PX$(0)=LG$+SP$+CHR$(167
       ):PX$(1)=DG$+SP$+CHR$(1
       67):FORI=0TO7:PX$(2)=PX
       $(2)+PX$(0):NEXT:PC$(0)
       =CHR$(155):PC$(1)=CHR$(
       152):EW=1:CA=82
SD 320 FORI=0TO15:C$(I)=PX$(2)
       :NEXT
CP 330 FK$="{8 SPACES}":FORI=0
       TO1:FORK=0TO3:F$=CHR$(1
       33+4*I+K):KEY(I+1+2*K),
       F$:MID$(FK$,I+1+2*K,1)=
       F$:NEXT:NEXT
RX 340 MN$=DN$+RT$+UP$+LT$+SP$
       +HM$+CS$+F$(0)+FK$+"CPO
       #"+RV$+CR$
QF 350 POKE2603,64:REM TURN ON
        CURSOR
XR 360 RETURN
JJ 370 :
JB 380 REM SCREEN SETUP
FS 390 COLOR6,7:PRINTLC$E$"M"E
       $"R"LB$HM$HM$CS$;
RJ 400 WINDOW 40,1,64,5,1:PRIN
       TDN$LT$"{I}"RV$DN$LT$SP
       $DN$LT$SP$DN$LT$SP$"
       {25 I}"RO$;
XH 410 PRINTCY$;:WINDOW 39,1,6
       3,4,1
AC 420 PRINTDN$TAB(4)"SUPER FO
       NT EDITOR":PRINTTAB(3)D
       N$"<C> 1993 COMPUTE"E$"
       L";
RP 430 GOSUB830:GOSUB470
BB 440 RETURN
PR 450 :
FA 460 REM EDIT WINDOW
ER 470 GOSUB760:GOSUB570
KB 480 PRINTE$"M"DB$;:IFEW THE
       N WINDOW 4,2,19,17,1
KB 490 PRINTLG$;:WINDOW 2,1,17
       ,16,EW
AQ 500 GOSUB960:PRINTHM$LC$UO$
       ;
BC 510 EW=0:PRINTLG$;:RETURN
RB 520 :
GG 530 PRINTLB$;:WINDOW 25,19,
       78,24:PRINTDN$LT$"{I}"R
       V$DN$LT$SP$DN$LT$SP$DN$
       LT$SP$DN$LT$SP$"{54 I}"
       RO$;
GK 540 PRINTLB$;:WINDOW 24,19,
       77,23:RETURN
DQ 550 PRINTLB$;:WINDOW 2,19,2
       0,19:RETURN
RE 560 :
AF 570 WINDOW 21,4,36,18
KM 580 PRINTE$"M"LG$SP$"C"SP$L
       B$"{I}-COPY
AM 590 PRINTSP$RV$"{3 I}
BS 600 PRINTLG$SP$"P"SP$LB$"
```

```
        {I}-PASTE
FM 610 PRINTSP$RV$"{3 I}
AJ 620 PRINTLG$RT$SP$"CLR"SP$L
        B$"{I}
RG 630 PRINTLG$RT$SP$"HOME"LB$
        RV$SP$
EJ 640 PRINTSP$SP$RV$"{5 I}
EB 650 PRINTLG$SP$"SPACE"SP$LB
        $"{I}-ON/OFF
AH 660 PRINTSP$RV$"{7 I}
QA 670 PRINTLG$"CTRL"LB$"{I}"L
        G$SP$"9"SP$LB$"{I}-REVR
        SE
ED 680 PRINTSP$RV$"{4 I}"RT$"
        {3 I}
BQ 690 PRINTLG$SP$"#"SP$LB$"
        {I}-CHARCODE #
CG 700 PRINTSP$RV$E$"Q{3 I}
HS 710 PRINTLG$SP$"O"SP$LB$"
        {I}-OPTIONS
DB 720 PRINTSP$RV$E$"Q{3 I}"RO
        $;
BF 730 RETURN
XX 740 :
PK 750 REM INFO
BE 760 PRINTDB$;:WINDOW 4,21,1
        9,23,1
CM 770 PRINTYL$;:WINDOW 2,20,1
        7,22,1
CF 780 PRINTUO$LC$SP$"CHARACTE
        R:"SP$CHR$(142-128*CS)S
        P$LT$LT$SP$LC$;:SYSWM,C
        O:PRINT
ED 790 PRINTTAB(5)"CODE :";STR
        $(CO):PRINTTAB(6)"SET :
        ";CS;
CK 800 RETURN
KD 810 :
BD 820 REM MENU
AD 830 WINDOW38,6,79,24
CJ 840 PRINTLG$"F1{2 SPACES}":
        PRINT"{2 SPACES}--"DG$"
        -"LB$"- FORWARD 1 CHARA
        CTER"
SM 850 PRINTRT$DG$"F2 -"LB$"--
         BACK 1 CHARACTER "
JE 860 PRINTLG$"F3{2 SPACES}":
        PRINT"{2 SPACES}--"DG$"
        -"LB$"- SELECT FROM KEY
        BOARD"
AQ 870 PRINTRT$DG$"F4 -"LB$"--
         ALTERNATE CHARACTER SE
        T
RX 880 PRINTLG$"F5 -"LB$"-- SE
        LECT 8/16 SCANLINES
DB 890 PRINTLG$"{2 SPACES}--"D
        G$"-"LB$"- "LG$"+ALT "L
        B$"- TOGGLE 16/15
JR 900 PRINTRT$DG$"F6 -"LB$"--
         DOUBLE OR RESTORE 8-LI
        NE FONT "
CB 910 PRINTLG$"F7{2 SPACES}":
        PRINT"{2 SPACES}--"DG$"
        -"LB$"- LOAD FONT"
HG 920 PRINTRT$DG$"F8 -"LB$"--
         SAVE FONT "
MB 930 RETURN
```

```
AQ 940 :
FP 950 REM GET CHARACTER DATA
HG 960 AD=DEC("2000")+16*(CS*2
        56+CO):AH=INT(AD/256):A
        L=AD-256*AH
SX 970 SYSWR,AH,18:SYSWR,AL,19
JX 980 FORI=0TO15:SYSRM:RREG D
        (I):NEXT
XR 990 FORI=0TO15:D$(I)="":FOR
        B=7TO0STEP-1:D$(I)=D$(I
        )+PX$(-((D(I)AND2↑B)>0)
        ):NEXT
RH 1000 PRINTRT$LT$;:WINDOW 2,
         1+I,17,1+I:PRINTUL$D$(
         I);:NEXT:PRINTUO$;
DS 1010 RETURN
CA 1020 :
PD 1030 REM FORWARD
ME 1040 CO=(CO+1)AND255:GOSUB4
         70:GOTO1220
JK 1050 REM BACK
KF 1060 CO=CO-1:IFCO<0THENCO=2
         55
FA 1070 GOSUB470:GOTO1220
PH 1080 REM ALT CHARSET
HD 1090 CS=-(CS=0):GOSUB470:GO
         SUB2010:GOTO1220
GF 1100 :
XQ 1110 REM KEYBOARD ENTRY
XG 1120 PRINTYL$E$"M";:WINDOW
         {SPACE}2,20,17,20,1
GS 1130 PRINTUO$" CHARACTER"CH
         R$(142-128*CS);:INPUTC
         H$
FS 1140 PRINTHM$TAB(11)":";:SY
         SRM:RREGCO:GOSUB470:GO
         TO1220
FK 1150 :
GD 1160 REM GET CHAR CODE
BX 1170 PRINTYL$E$"M";:WINDOW
         {SPACE}2,21,17,21,1
CX 1180 C=-1:PRINTUO$"
         {5 SPACES}CODE ";:INPU
         TC:IFC<256ANDC>0THENCO
         =C
FJ 1190 GOSUB470:GOTO1220
AP 1200 :
HB 1210 REM HOME CURSOR
AX 1220 PRINTE$"M";:WINDOW 2,1
         ,17,16:R=0:C=7
GX 1230 SYSWR,64,10:RETURN
QS 1240 :
HQ 1250 REM DOWN
CJ 1260 R=R+1:IFR>15THENR=0
FB 1270 GOTO1400
EC 1280 REM RIGHT
ES 1290 C=C-1:IFC<0THENC=7:R=R
         +1:IFR>15THENR=0
MB 1300 GOTO1400
CQ 1310 REM UP
AD 1320 R=R-1:IFR<0THENR=15
DC 1330 GOTO1400
AP 1340 REM LEFT
SH 1350 C=C+1:IFC>7THENC=0:R=R
         -1:IFR<0THENR=15
QE 1360 GOTO1400
GD 1370 REM RETURN KEY
```

```
MK 1380 C=7:R=R+1:IFR>15THENR=
         0
MK 1390 :
KC 1400 PRINTRT$LT$;
GX 1410 WINDOW 2,1+R,17,1+R:PR
         INT RT$ LT$ LEFT$(RR$,
         14-2*C);:RETURN
FK 1420 :
RA 1430 REM TOGGLE PIXEL
QB 1440 PX=-((D(R)AND2↑C)=0):P
         RINTUL$PX$(PX)UO$;:GOS
         UB1410
KF 1450 MID$(D$(R),22-3*C,3)=P
         X$(PX):D(R)=XOR(D(R),2
         ↑C)
DK 1460 REM WRITE TO VDC
HM 1470 AD=DEC("2000")+R+16*(C
         S*256+CO):AH=INT(AD/25
         6):AL=AD-256*AH
JS 1480 SYSWR,AH,18:SYSWR,AL,1
         9
KA 1490 SYSWM,D(R)
EX 1500 RETURN
SX 1510 :
GF 1520 REM CLEAR
XD 1530 AD=DEC("2000")+16*(CS*
         256+CO):AH=INT(AD/256)
         :AL=AD-256*AH
JF 1540 GOSUB1220:FORI=0TO15:D
         $(I)=PX$(2):D(I)=0:PRI
         NTUL$D$(I);:NEXT:PRINT
         UO$;
PM 1550 SYSWR,AH,18:SYSWR,AL,1
         9
DF 1560 FORI=0TO15:SYSWM,D(I):
         NEXT:GOTO1220
RE 1570 :
RE 1580 REM COPY
DB 1590 GOSUB550:PRINTGR$CS$DN
         $"COPYING...":FORI=0TO
         15:C$(I)=D$(I):C(I)=D(
         I):NEXT:PRINTLB$CS$:GO
         TO1220
GE 1600 :
AH 1610 REM PASTE
GE 1620 AD=DEC("2000")+16*(CS*
         256+CO):AH=INT(AD/256)
         :AL=AD-256*AH
PF 1630 GOSUB1220:FORI=0TO15:D
         $(I)=C$(I):D(I)=C(I):P
         RINTRT$LT$;:WINDOW2,1+
         I,17,1+I:PRINTUL$D$(I)
         ;:NEXT
BE 1640 SYSWR,AH,18:SYSWR,AL,1
         9
MD 1650 FORI=0TO15:SYSWM,D(I):
         NEXT:GOTO1220
EK 1660 :
FC 1670 REM REVERSE
HJ 1680 AD=DEC("2000")+16*(CS*
         256+CO):AH=INT(AD/256)
         :AL=AD-256*AH
HM 1690 GOSUB1220:FORI=0TO15:D
         (I)=XOR(D(I),255):D$(I
         )="":FORB=7TO0STEP-1:D
         $(I)=D$(I)+PX$(-((D(I)
         AND2↑B)>0)):NEXT
```

```
SG 1700 PRINTRT$LT$;:WINDOW 2,
        1+I,17,1+I:PRINTUL$D$(
        I);:NEXT
CA 1710 SYSWR,AH,18:SYSWR,AL,1
        9
ES 1720 FORI=0TO15:SYSWM,D(I):
        NEXT:GOTO1220
FR 1730 :
HF 1740 REM SAVE
DX 1750 F$="":GOSUB540:PRINTGR
        $CS$DN$" SAVE:":INPUT"
         FILENAME";F$:IF F$=""
        THEN1820
BH 1760 INPUT" DEVICE #";DR:IF
        DR<8ORDR>15THEN1820
SR 1770 AD=DEC("2000"):AH=INT(
        AD/256):AL=AD-256*AH
HM 1780 SYSWR,AH,18:SYSWR,AL,1
        9
BB 1790 OPEN 2,DR,2,F$+",U,W":
        A=DS:A$=DS$:IFATHEN181
        0
PM 1800 SYSDEC("1386")
EJ 1810 CLOSE2:PRINTA$:SLEEP2
JD 1820 GOSUB2010:GOTO1220
JE 1830 :
EA 1840 REM LOAD
PE 1850 GOSUB540:F$="":DR=0:PR
        INTGR$CS$DN$" LOAD: ":
        INPUT" DEVICE #";DR:IF
        DR<8ORDR>15THEN1930
SF 1860 PRINTDN$"ENTER '$' FOR
         DIRECTORY"UP$UP$:INPU
        T"FONT FILE TO LOAD";F
        $
GF 1870 IF F$="$"THEN GOSUB196
        0:GOTO1850:ELSE IF F$=
        ""THEN 1930
DG 1880 AD=DEC("2000"):AH=INT(
        AD/256):AL=AD-256*AH
KE 1890 PRINTE$"M";:GOSUB2010:
        SYSWR,AH,18:SYSWR,AL,1
        9
JA 1900 OPEN 2,DR,2,F$:A=DS:D$
        =DS$:IFATHEN1920
QX 1910 SYSDEC("1366")
FA 1920 CLOSE2:PRINTHM$LR$D$;:
        SLEEP2
SP 1930 EW=1:GOSUB390:GOSUB201
        0:GOTO1220
XP 1940 :
JQ 1950 REM DIRECTORY
DX 1960 PRINTDB$;:WINDOW 51,1,
        78,18,1:PRINTYL$E$"L";
        :WINDOW 49,0,76,17,1:P
        RINTLR$" PRESS NO SCRO
        LL TO PAUSE"E$"Q"YL$CR
        $E$"T"
MR 1970 CATALOG ON U(DR)
GX 1980 RETURN
QX 1990 :
KF 2000 REM DISPLAY CHARSET
GR 2010 GOSUB530:PRINTLG$CHR$(
        142-128*CS);CS$;
MA 2020 FORI=0TO4:PRINTSP$;:FO
        RJ=0TO51:SYSWM,(J+51*I
        )AND255:NEXT:PRINTCR$;
        :NEXT
FA 2030 PRINTLC$;:RETURN
DA 2040 :
ER 2050 REM TOGGLE 8/16 SCANLI
        NE SCREEN
ME 2060 IF VR=1AND (PEEK(211)A
        ND8)>0 THEN VD=14-(VD=
        14):GOTO2080
FQ 2070 IF VR THEN 2090
DH 2080 VR=1:SYSWR,1,36:SYSWR,
        3,8:SYSWR,VD,9:SYSWR,V
        D,11:SYSWR,VD,23:SYSWR
        ,VD,29:RETURN
BP 2090 VR=0:SYSWR,0,8:SYSWR,7
        ,9:SYSWR,7,11:SYSWR,7,
        23:SYSWR,7,29:RETURN
BD 2100 :
SF 2110 REM DOUBLE CHARACTER D
        ATA SIZE
QH 2120 GOSUB540:PRINTYL$CS$DN
        $" SELECT : "RV$"D"RO$
        " - DOUBLE 1ST EIGHT L
        INES":PRINTTAB(10)RV$"
        R"RO$" - RESTORE SYSTE
        M FONT":PRINT"
        {2 SPACES}ANY OTHER KE
        Y ABORTS..."
DC 2130 GETKEYK$:IFK$="R"THENG
        OSUB2010:SYSDEC("FF62"
        ):GOTO2200
BS 2140 IFK$<>"D"THEN GOSUB201
        0:GOTO2200
BM 2180 GOSUB2010
GB 2190 SYSDEC("1300")
DR 2200 GOSUB470:GOTO1220
XB 2310 :
AB 2320 REM OPTIONS
CE 2330 GOSUB540:PRINTLG$CS$YL
        $" OPTIONS:"LG$
BR 2340 PRINTTAB(10)RV$"R"RO$"
         - COPY NORMAL TO "RV$
        "REVERSE"RO$" CHARACTE
        RS"
BX 2350 PRINTTAB(10)RV$"T"RO$"
         - TRANSFER BETWEEN CH
        ARACTER SETS"
JC 2360 GETKEYK$:IFK$<>"R"ANDK
        $<>"T"THEN GOSUB2010:G
        OTO2380
KQ 2370 ONINSTR("RT",K$)GOSUB2
        410,2510
PH 2380 GOTO1220
HH 2390 :
MJ 2400 REM COPY TO REVERSE VI
        DEO CHARSET
RJ 2410 GOSUB2010
DQ 2420 FORCO=0TO127:AD=DEC("2
        000")+16*(CS*256+CO):A
        H=INT(AD/256):AL=AD-25
        6*AH
QF 2430 SYSWR,AH,18:SYSWR,AL,1
        9
KP 2440 FORI=0TO15:SYSRM:RREG
        {SPACE}D(I):NEXT
JA 2450 AD=DEC("2000")+16*(CS*
        256+CO+128):AH=INT(AD/
        256):AL=AD-256*AH
HD 2460 SYSWR,AH,18:SYSWR,AL,1
        9
AK 2470 FORI=0TO15:SYSWM,XOR(D
        (I),255):NEXT
XE 2480 NEXT:RETURN
RS 2490 :
RM 2500 REM TRANSFER BETWEEN C
        HARSETS
SB 2510 GOSUB540:PRINTLG$CS$"T
        RANSFER BETWEEN CHARAC
        TER SETS":INPUT"SOURCE
         SET";S:IFS<0ORS>1THEN
        2610
KM 2520 INPUT"FIRST SOURCE COD
        E";FC:IFFC<0ORFC>255TH
        EN2010
SX 2530 INPUT" LAST SOURCE COD
        E";LC:IFLC<FCORLC>255T
        HEN2010
XH 2540 INPUT"1ST DESTINATION
        {SPACE}CODE";DC:IFDC<0
        ORDC>255-LC-FCTHENPRIN
        TUP$E$"Q";:GOTO2540
XM 2550 CS=-(S=0):GOSUB2010
XS 2560 SA=DEC("2000")+16*(S*2
        56+FC):SH=INT(SA/256):
        SL=SA-256*SH
FE 2570 DA=DEC("2000")+16*(CS*
        256+DC):DH=INT(DA/256)
        :DL=DA-256*DH
JC 2580 SYSWR,DH,18:SYSWR,DL,1
        9
KK 2590 SYSRR,,24:RREGA:SYSWR,
        A OR128,24:SYSWR,SH,32
        :SYSWR,SL,33
BH 2600 FORI= FC TO LC:SYSWR,1
        6,30:NEXT
HC 2610 RETURN
BF 3000 RESTORE:I=4864:DO:READ
        A$:IFA$="END" THEN EXI
        T
AE 3010 POKEI,DEC(A$):I=I+1:LO
        OP:RETURN
HC 3020 DATA 20,0F,13,A9,20,85
        ,FA,A9,00,85,FB,85,FC,
        F0,19,A9
CJ 3030 DATA 30,85,FA,A9,00,85
        ,FB,85,FC,F0,0D,A2,12,
        20,DA,CD
JE 3040 DATA 85,FA,E8,20,DA,CD
        ,85,FB,A5,FA,A2,12,20,
        CC,CD,E8
CQ 3050 DATA A5,FB,20,CC,CD,A0
        ,00,20,D8,CD,99,00,04,
        C8,C0,08
JC 3060 DATA D0,F5,A5,FA,A2,12
        ,20,CC,CD,A5,FB,E8,20,
        CC,CD,A0
RC 3070 DATA 00,B9,00,04,20,CA
        ,CD,20,CA,CD,C8,C0,08,
        D0,F2,E6
JB 3080 DATA FC,A6,FC,D0,B6,60
        ,A2,00,86,FB,86,FA,A2,
        02,20,C6
XQ 3090 DATA FF,20,CF,FF,20,CA
        ,CD,E6,FA,D0,F6,E6,FB,
        A6,FB,E0
```

```
MF 3100 DATA 20,90,EE,4C,CC,FF
        ,A2,00,86,FB,86,FA,A2,
        02,20,C9
JQ 3110 DATA FF,20,D8,CD,20,D2
        ,FF,E6,FA,D0,F6,E6,FB,
        A6,FB,E0
DD 3120 DATA 20,90,EE,4C,CC,FF
        ,END
```

AUTOHEADER.MAKER

```
PK 5 REM COPYRIGHT 1993 - COMP
     UTE PUBLICATIONS INTL LTD
      - ALL RIGHTS RESERVED
FQ 10 REM SUPERFONT AUTOHEADER
       MAKER
FP 20 INPUT "DESTINATION DEVIC
      E";DD:IFDD<8ORDD>30THEN2
      0
AC 30 OPEN2,DD,2,"SFONT.AUTOHE
      ADER,P,W"
JF 40 RESTORE:DO:READ A$:IFA$=
      "END"THEN EXIT
ES 50 PRINT#2,CHR$(DEC(A$));:L
      OOP
KX 60 FORI=0TO112:PRINT#2,CHR$
       (96);:NEXT:CLOSE2
GB 1000 DATA 01,1C,31,1C,0A,00
        ,9E,37,32,32,30,2C,31,
        35,3A,8F
MQ 1010 DATA 20,53,55,50,45,52
        ,46,4F,4E,54,20,41,55,
        54,4F,4C
GS 1020 DATA 4F,41,44,20,28,43
        ,29,20,52,49,43,4B,20,
        4B,41,4E
AH 1030 DATA 45,00,00,00,00,AA
        ,AD,30,D0,48,09,01,8D,
        30,D0,8A
GJ 1040 DATA 48,A2,24,A9,01,20
        ,CC,CD,A2,08,A9,03,20,
        CC,CD,68
AG 1050 DATA A2,09,20,CC,CD,A2
        ,0B,20,CC,CD,A2,17,20,
        CC,CD,A2
CS 1060 DATA 1D,20,CC,CD,A2,13
        ,A9,00,20,CC,CD,CA,A9,
        20,20,CC
KR 1070 DATA CD,A9,1D,85,FB,A9
        ,00,85,FA,A0,00,B1,FA,
        20,CA,CD
PP 1080 DATA C8,D0,F8,E6,FB,A5
        ,FB,C9,3D,D0,F0,68,8D,
        30,D0,60,END
```

Rick Kane is the author of I Paint, a trademark of Living Proof, Ltd.

SCRIPT FIX

By Rick Kane

If you looked at the previous article on Super Screen Fonts, you know how this enhanced character mode can sharpen the onscreen text of a 128 from 8 × 8 pixels to 8 × 16 pixels. Wouldn't it be great to take advantage of this enhanced mode when using SpeedScript 128, COMPUTE's word processing program? You can with Script Fix and Super Screen Fonts.

Script Fix is written in BASIC. To help avoid typing errors, enter it with The Automatic Proofreader. See "Typing Aids" elsewhere in this section. Be sure to save the program before you attempt to run it.

Modifying SpeedScript

When you run Script Fix, it will ask for a copy of SpeedScript 128 to load and modify. If you already use one of the SpeedScript enhancement programs such as SpeedSpell, start with an unmodified version of SpeedScript. If the patch program doesn't find the expected bytes where the patch goes, it will abort. If it is successful, Script Fix will ask for a filename for the modified version. The program will suggest adding SF to the source file's name, truncating it if it's longer than 16 characters.

When all done, run your installation program to set up the 8 × 16 characters. Then run the modified SpeedScript. It's beautiful!

SpeedScript with superfonts should be compatible with other add-ons to SpeedScript 128, especially if they are installed after the superfont fix. There is one certain caveat: Don't try to use the 50-row mode of SpeedSpell, or your screen will turn to garbage.

SCRIPT FIX

```
GJ 50 REM COPYRIGHT 1993 - COM
      PUTE PUBLICATIONS INTL L
      TD - ALL RIGHTS RESERVED
PX 100 DV=PEEK(186):IFDV<8THEN
       DV=8
CQ 110 GRAPHIC CLR:G=RGR(0):GR
       APHIC 1:GRAPHIC G
HH 120 TRAP 265:PRINTCHR$(147)
       "SPEEDSCRIPT 128 : SUPE
       RFONT FIX"
HX 130 F$="SPEEDSCRIPT 128"
JQ 140 PRINT "LOAD FILENAME
       {2 SPACES}"+F$+CHR$(27)
       +"J";TAB(13);:INPUT N$
XH 150 PRINT "FROM DEVICE ";DV
       ;CHR$(27)"J";TAB(11);:I
       NPUT FD
PF 160 IF FD<8 OR FD>30 THEN 1
       50
CB 170 SF$=LEFT$(N$,13)+".SF"
XQ 180 PRINT"LOADING...":BLOAD
        (N$),B0,P(DEC("1C01"))
GB 190 IFPEEK(174)+PEEK(175)*2
       56<>13578 THEN PRINT"I
       {SPACE}DON'T KNOW THIS
       {SPACE}VERSION!":GRAPHI
       CCLR:END
RK 200 PRINT"PATCHING...":REST
       ORE:DO:READ ADR:IF ADR<
       0 THEN EXIT
XA 210 READ BYTES:FORI= 0TO BY
       TES:READ WAS,IS:IF PEEK
       (ADR+I)<>WAS THEN 280
FK 220 POKE ADR+I,IS:NEXT:LOOP
HB 230 PRINT"SUCCESSFUL!":PRIN
       T "SAVE FILENAME
       {2 SPACES}"+SF$+CHR$(27
       )+"J";TAB(13);:INPUT N$
KQ 240 PRINT "TO DEVICE ";FD;C
       HR$(27)"J";TAB(9);:INPU
       T TD
ED 250 IF TD<8 OR TD>30 THEN 2
       40
HJ 260 PRINT"SAVING...":BSAVE(
       N$),B0,P(7169)TO P(1357
       8),U(TD)
XM 265 IF DS THEN PRINTDS$
EG 270 GRAPHICCLR:END
DR 280 PRINT"UNEXPECTED BYTES
       {SPACE}FOUND!":GRAPHICC
       LR:END
BJ 290 DATA 7182,0,32,44
JK 300 DATA 7862,8,120,32,169,
       86,1,224,141,32,4,0,10,
       192,76,108,83,0,250,10
PK 310 DATA -1
```

Rick Kane is an independent video and film cameraman who lives in Minneapolis, Minnesota.

DOUBLE SIZE

By Rick Kane

Here's another program in which the 8 × 16 characters can be used on a 128. Be sure to start reading the Super Screen Fonts program in this issue for full details.

In noninterlaced mode, the 8 × 16 characters are twice as tall as regular characters. In combination with pixel double-width mode, they can be made twice as wide as well. The end result is a screen 40 characters wide and 12 characters tall.

This added size might be useful for in-store advertising displays, giving your eyes a rest while programming, or allowing everyone to sit back instead of huddling around the monitor at computer club meetings!

Double Size is written entirely in BASIC. To help avoid typing errors, enter it with The Automatic Proofreader. See "Typing Aids" elsewhere in this section. Be sure to save a copy of the program before you attempt to run it.

Bigger Text

If you run Double Size without first installing an 8 × 16 character set created from Super Font, you'll get the standard characters with double line spacing—a result which might have some uses of its own. Normally, you'll want to install your favorite set or create one especially for use in double-size mode.

This program is compatible with the screen editor as long as you don't define a new window or undefine the window by pressing Home twice. Your BASIC programs, program listings, and directories will work normally. Again, reset to normal by typing *SYS 57721: SYS 65378.*

Beyond Big

These techniques aren't limited to 8 × 16 characters. You could easily define characters that are 8 × 9, 8 × 12, or even 8 × 5 if you wanted. You'd have to adjust the total number of screen rows displayed (8563 registers 4, 6, 7, and 9 particularly) according to your needs.

With a little more difficulty, you can go beyond 16, up to 8- × 32-pixel characters! Above 16, though, character memory is handled differently. The system automatically allocates 16 bytes per character for any character set 8 × 16 or smaller. Above that, it switches to 32 bytes per character, so you need to reposition the start of each definition at 32-byte intervals, instead of 16-byte intervals. Also, note that one 256-byte character set now takes 8192 bytes. This means that for all practical purposes, you can use only one character set if you want to have any memory for display and attributes!

To try out even larger text, type in Beyond Big. It is also written in BASIC and should be entered with The Automatic Proofreader.

Save the program and then run it. Beyond Big asks for an 8 × 16 superfont file to read. Then it asks which character set to use. Character set 0 is uppercase/graphics, and set 1 is uppercase/lowercase. The file is read and then automatically doubled for 8- × 32-pixel characters.

Then the screen is set for a 40-column by 6-row screen! That's not a lot of space, but, as usual, the screen editor works normally. Colors, blink, underline, and so on are all available for scrolling, crawling text, or other clever (and big) displays.

DOUBLE SIZE

```
BM 0 REM COPYRIGHT 1993 - COMP
     UTE PUBLICATIONS INTL LTD
      - ALL RIGHTS RESERVED
QH 10 REM DOUBLE HIGH/WIDE USI
      NG 8X16 & PIXEL DOUBLE W
      IDTH
GG 20 REM BY RICK KANE
EH 100 WR=DEC("CDCC")
RJ 110 SYS WR,16,4:SYS WR,15,7
       :SYS WR,12,6:SYS WR,15,
       9:SYS WR, 15,23:SYS WR,
       15,11:SYS WR,15,29:SYSW
       R,0,8:REM HEIGHT
AQ 120 SYSWR,64+16+7,25:SYSWR,
       63,0:SYSWR,40,1:SYSWR,5
       3,2:SYSWR,137,22:SYSWR,
       40,27:SYSWR,63,34:SYSWR
       ,52,35:REM WIDTH
QC 130 PRINT"{2 HOME}{CLR}":WI
       NDOW 0,0,39,11
```

BEYOND BIG

```
DJ 0 REM COPYRIGHT 1993 - COMP
     UTE PUBLICATONS INTL LTD
     {SPACE}- ALL RIGHTS RESER
     VED
JK 10 REM 8X32 PIXEL CHARACTER
      S
GG 20 REM BY RICK KANE
CC 30 RR=DEC("CDDA"):WR=DEC("C
      DCC")
XG 40 GOSUB1000
SG 50 INPUT"DEVICE";DV:IFDV<8O
      RDV>30THEN50
SR 60 INPUT"FONT FILE";F$
XQ 70 INPUT"WHICH CHARACTER SE
      T";CS:IFCS THEN CS=1
QK 100 OPEN2,8,2,F$:SYSDEC("CD
       CC"),32,18:SYSDEC("CDCC
       "),0,19:SYS4864,CS:CLOS
       E2
AX 110 SYSWR,31,9:SYSWR,31,23:
       SYSWR,31,11:SYSWR,31,29
       :SYSWR, 6,6:SYSWR, 8,7:
       SYSWR, 8,4:REM SET 32 P
       IXEL NON INTERLACED
DF 120 SYSWR,64+16+7,25:SYSWR,
       63,0:SYSWR,40,1:SYSWR,5
       3,2:SYSWR,137,22:SYSWR,
       40,27:SYSWR,63,34:SYSWR
       ,52,35:REM DOUBLE WIDTH
MP 130 PRINT"{2 HOME}{CLR}":WI
       NDOW 0,0,39,5:END
HX 1000 RESTORE:I=4866:DO:READ
        A$:IFA$="END" THEN EXI
        T
RJ 1010 POKEI,DEC(A$):I=I+1:LO
        OP:RETURN
XP 1020 DATA C9,00,F0,1A,A2,00
        ,86,FB,86,FA,A2,02,20,
        C6,FF,20
BS 1030 DATA CF,FF,E6,FA,D0,F9
        ,E6,FB,A6,FB,E0,10,90,
        F1,A2,00
BC 1040 DATA 86,FB,86,FA,A2,02
        ,20,C6,FF,20,CF,FF,48,
        20,CA,CD
AD 1050 DATA 68,20,CA,CD,E6,FA
        ,D0,F1,E6,FB,A6,FB,E0,
        10,90,E9
XR 1060 DATA 4C,CC,FF,END
```

Rick Kane has been programming 64s and 128s since 1983.

VERTISCROLL

By Daniel English

We've all seen programs that scroll text along the bottom of the screen or inside the screen's border. VertiScroll is a program for the 64 that takes this idea to another extreme by allowing a message to scroll smoothly down the left side of the screen. The scrolling message won't interfere with any text, character, or bitmap display.

As you may have guessed, the letters in the scroll are created with sprites. What you may not have guessed is that the entire message uses only a single sprite. The remaining seven sprites are unaffected by VertiScroll. VertiScroll efficiently uses the 64's raster interrupt feature to create its effects. You'll find that a smooth scrolling vertical message can enhance many programs.

Getting Started

VertiScroll consists of three programs: two machine language programs and a BASIC one. Of the two machine language files, one is a code file and one a sprite file. To enter them, use MLX, COMPUTE'S machine language entry program. See "Typing Aids" elsewhere in this section. To enter VS.Code, respond with the following starting and ending addresses when MLX prompts.

Starting address: 4000
Ending address: 4217

To enter VS.Letters, respond with the following starting and ending addresses when MLX prompts.

Starting address: 5000
Ending address: 5CC7

The third program, VertiScroll, is the text editor. Since it is written in BASIC, use The Automatic Proofreader to help avoid typing errors. Again, see "Typing Aids." All three files should be saved to the same disk. Be sure to save the programs with the filenames as listed, since the VertiScroll editor searches for and loads these files.

The Editor

To do a quick test of VertiScroll, load the editor and type *RUN*. You will then be instructed to press the space bar to enter the text editor. When the screen clears, you may begin entering your message. All letters, numbers, and most punctuation are available.

When typing, don't attempt to wrap words from one screen line to the other; let them cut off. They will be continuous in the scroll. You may use a maximum of 12 lines.

When you have finished entering your message, end it with the @ symbol. This tells the computer when to repeat the message. When you press Return, your message will be stored.

Going Vertical

When your scroll has been stored, you have a chance to preview your message as it will appear. You will then be prompted to either edit your message or save it to disk.

After your message has been saved on disk, it's ready to be used in your own program. All you need to do is have your program load VS.LETTERS, VS.CODE, and your message.

The command to begin scrolling is SYS 16384. To disable the scrolling, enter *SYS 16387*. Don't press Run/Stop and Restore to disable the scroll, because this will crash the computer.

Custom Letters

VertiScroll was designed to be customized. The sprite data is stored in bank 1, at $5000. You can edit all of the letters, numbers, and punctuation using a sprite editor.

Once the scroll has been installed using the command SYS 16384, you can change the color, size, and location of the message. Changing the values for the sprite 0 registers will change the entire scroll. For example, to move the scrolling text to the middle of the screen, try POKE 53248,150.

You can change colors by altering the sprite color registers. See the table at the end of the article for a list of POKES.

The default location for the text is at $4220. If you want to put your text somewhere else, POKE 16076, HI: POKE 16078,LO will change the pointer. You will also need to change the start and end in line 40 of the editor. Remember, there is still a 12-line (480 character) maximum.

When you enter *SYS 16384*, all graphic data including the text screen is moved to bank 1. When you disable the scroll, the data is restored to bank 0. The letters scroll independently, leaving the computer free for other tasks. Whether you're writing business software or just playing games, VertiScroll will create a dazzling display.

VertiScroll POKEs

Here are a list of POKEs that you might want to use to customize your onscreen message.

POKE 53248, X—Move scroll left and right
POKE 53264, 1—Move scroll beyond 255th *x* position
POKE 53269, 0—Hide letters
POKE 53269, 1—Show letters
POKE 53275, 1—Display scroll under screen text
POKE 53275, 0—Display scroll over screen text
POKE 53287, X—Change first color of scroll message
POKE 53285, X—Change second color
POKE 53286, X—Change last color
POKE 53277, 1—Double width scroll
POKE 53277, 0—Normal width scroll

VS.CODE

```
4000:4C 9D 41 4C 78 40 00 26 E5
4008:A9 01 8D 19 D0 20 67 40 F6
4010:AD 06 40 C9 00 F0 19 C9 4D
4018:0A F0 27 AD 01 D0 18 69 7E
4020:15 8D 01 D0 8D 03 D0 8D 63
4028:12 D0 20 B5 40 4C 5A 40 6D
4030:AD 07 40 8D 01 D0 8D 03 93
4038:D0 8D 12 D0 20 B5 40 4C 78
4040:5A 40 AD 01 D0 18 69 15 92
4048:8D 01 D0 8D 03 D0 8D 12 4B
4050:D0 20 B5 40 20 CA 40 20 C8
4058:CA 40 AD 0D DC 29 01 F0 53
4060:03 4C 31 EA 4C BC FE EE 8C
4068:06 40 AD 06 40 C9 0B F0 42
4070:01 60 A9 00 8D 06 40 60 24
4078:A9 00 8D 15 D0 78 A9 31 BD
4080:8D 14 03 A9 EA 8D 15 03 82
4088:A9 81 8D 0D DC A9 00 8D DB
4090:1A D0 8D 0D DC A9 1B 8D 26
4098:11 D0 58 A9 15 8D 18 D0 5B
40A0:A9 C7 8D 00 DD A9 3F 8D 3B
40A8:02 DD A9 04 8D 88 02 A9 53
40B0:93 20 D2 FF 60 AC 06 40 5F
40B8:B9 BF 40 8D F8 47 60 40 CC
40C0:40 40 40 40 40 40 40 40 41
40C8:40 40 EE 07 40 AD 07 40 CE
40D0:C9 3B F0 01 60 A9 26 8D B6
40D8:07 40 A0 00 B9 BF 40 99 E7
40E0:A7 02 C8 C0 0A D0 F5 A0 FA
40E8:00 B9 A7 02 99 C0 40 C8 06
40F0:C0 0A D0 F5 A0 00 B1 02 38
40F8:AA E0 00 F0 44 E0 1B 90 82
4100:11 E0 23 90 15 E0 3C 90 E5
4108:19 E0 3F F0 1D A2 58 4C B6
4110:2F 41 8A 18 69 58 AA 4C 9B
4118:2F 41 8A 18 69 20 AA 4C C2
4120:2F 41 8A 18 69 1C AA 4C BA
4128:2F 41 A2 58 4C 2F 41 8A 98
4130:8D BF 40 A5 02 18 69 01 10
4138:85 02 A5 03 69 00 85 03 3C
4140:60 A0 42 A2 20 86 02 84 31
4148:03 60 AD 0E DC 29 FE 8D 12
4150:0E DC A5 01 29 FB 85 01 1B
4158:A0 D0 A2 00 86 FA 84 FB D8
4160:A0 48 A2 00 86 FC 84 FD C8
4168:A0 00 B1 FA 91 FC A5 FA E7
4170:18 69 01 85 FA A5 FB 69 A1
4178:00 85 FB A5 FC 18 69 01 52
4180:85 FC A5 FD 69 00 85 FD ED
4188:A5 FD C9 50 D0 DA A5 01 D9
4190:09 04 85 01 AD 0E DC 09 C1
4198:01 8D 0E DC 60 A9 00 8D C5
41A0:15 D0 8D 1B D0 A9 01 8D 02
41A8:1C D0 A9 1A 8D 00 D0 A9 FB
41B0:00 8D 10 D0 A9 01 8D 27 39
41B8:D0 A9 0D 8D 25 D0 A9 05 4D
41C0:8D 26 D0 A9 C6 8D 00 DD 92
41C8:A9 3F 8D 02 DD A9 44 8D 6D
41D0:88 02 A9 93 20 D2 FF A9 7C
41D8:40 A0 00 99 BF 40 C8 C0 8E
41E0:0B D0 F8 20 41 41 20 4A D7
41E8:41 A9 13 8D 18 D0 78 A9 50
41F0:1B 8D 11 D0 A9 01 8D 1A 1A
41F8:D0 A9 FF 8D 06 40 A9 08 B3
4200:8D 14 03 A9 40 8D 15 03 B0
4208:A9 7F 8D 0D DC 58 A9 01 60
4210:8D 15 D0 60 00 00 00 00 C0
```

VS.LETTERS

```
5000:00 00 00 00 00 00 00 00 A0
5008:00 00 00 00 00 00 00 00 A8
5010:00 00 00 00 00 00 00 00 B0
5018:00 00 00 00 00 00 00 00 B8
5020:00 00 00 00 00 00 00 00 C0
5028:00 00 00 00 00 00 00 00 C8
5030:00 00 00 00 00 00 00 00 D0
5038:00 00 00 00 00 00 00 00 D8
5040:00 00 00 00 00 00 00 00 E0
5048:00 00 00 00 00 00 00 00 E8
5050:00 00 00 00 00 A0 00 00 73
5058:AA 40 00 AA 55 00 0A 55 1D
5060:3F 00 15 3F 00 00 3F 00 B5
5068:00 00 00 00 00 00 00 00 09
```

```
5070:00 00 00 00 00 00 00 00 11
5078:00 00 00 00 00 00 00 00 19
5080:00 00 00 00 00 00 00 00 21
5088:00 00 00 00 00 00 00 00 29
5090:00 00 00 00 00 A8 00 00 D3
5098:AA 00 00 AA 00 00 00 00 39
50A0:00 00 00 00 AA 00 00 AA 41
50A8:00 00 A8 00 00 00 00 00 5E
50B0:00 00 00 00 00 00 00 00 51
50B8:00 00 00 00 00 00 00 00 59
50C0:00 00 00 00 00 00 00 00 61
50C8:00 00 00 00 00 00 00 00 69
50D0:00 00 00 00 00 00 00 00 71
50D8:2A 00 00 AA 40 00 A8 40 CC
50E0:00 20 40 00 00 00 00 00 91
50E8:00 00 00 00 00 00 00 00 89
50F0:00 00 00 00 00 00 00 00 91
50F8:00 00 00 00 00 00 00 00 99
5100:00 00 00 00 00 00 00 00 A2
5108:00 00 00 00 00 00 00 00 AA
5110:00 00 00 00 00 00 00 00 B2
5118:80 00 03 A0 00 0F 2A 55 4B
5120:FC 0A 55 F0 00 00 00 00 7D
5128:00 00 00 00 00 00 00 00 CA
5130:00 00 00 00 00 00 00 00 D2
5138:00 00 00 00 00 00 00 00 DA
5140:00 00 00 00 00 00 00 00 E2
5148:00 00 00 00 00 00 00 00 EA
5150:00 00 00 00 00 00 00 00 F2
5158:00 00 00 0A 55 F0 2A 55 B3
5160:FC A0 00 0F 80 00 03 00 A4
5168:00 00 00 00 00 00 00 00 0B
5170:00 00 00 00 00 00 00 00 13
5178:00 00 00 00 00 00 00 00 1B
5180:00 00 00 00 00 00 00 00 23
5188:00 00 10 00 00 10 00 08 75
5190:10 C0 0A 11 C0 02 55 00 76
5198:00 54 00 2A 55 F0 00 54 B5
51A0:00 02 55 00 0A 11 C0 08 8C
51A8:10 C0 00 10 00 00 10 00 A4
51B0:00 00 00 00 00 00 00 00 53
51B8:00 00 00 00 00 00 00 00 5B
51C0:00 00 00 00 00 00 00 00 63
51C8:00 00 00 00 00 00 00 00 6B
51D0:14 00 00 14 00 00 14 00 E6
51D8:00 14 00 0A 55 F0 0A 55 F8
51E0:F0 00 14 00 00 14 00 00 CE
51E8:14 00 00 14 00 00 14 00 FE
51F0:00 00 00 00 00 00 00 00 93
51F8:00 00 00 00 00 00 00 00 9B
5200:00 00 00 00 00 00 00 00 A4
5208:00 00 00 00 00 00 00 00 AC
5210:00 00 00 00 00 00 00 00 B4
5218:00 00 FC 00 01 FF 00 01 65
5220:F3 00 00 C0 00 00 00 00 CA
5228:00 00 00 00 00 00 00 00 CC
5230:00 00 00 00 00 00 00 00 D4
5238:00 00 00 00 00 00 00 00 DC
5240:00 00 00 00 00 00 00 00 E4
5248:00 00 00 00 00 00 00 00 EC
5250:14 00 00 14 00 00 14 00 68
5258:00 14 00 00 14 00 00 14 B6
5260:00 00 14 00 00 14 00 00 D7
5268:14 00 00 14 00 00 14 00 80
5270:00 00 00 00 00 00 00 00 15
5278:00 00 00 00 00 00 00 00 1D
5280:00 00 00 00 00 00 00 00 25
5288:00 00 00 00 00 00 00 00 2D
5290:00 00 00 00 00 00 00 00 35
5298:00 00 3C 00 00 FF 00 00 C4
```

```
52A0:FF 00 00 3C 00 00 00 00 09
52A8:00 00 00 00 00 00 00 00 4D
52B0:00 00 00 00 00 00 00 00 55
52B8:00 00 00 00 00 00 00 00 5D
52C0:00 00 00 00 00 00 80 00 66
52C8:00 A0 00 00 A8 00 00 AA 85
52D0:00 00 2A 40 00 0A 50 00 87
52D8:02 54 00 00 55 00 00 15 53
52E0:C0 00 05 F0 00 01 FC 00 93
52E8:00 FF 00 00 3F 00 00 0F 96
52F0:00 00 03 00 00 00 00 00 F5
52F8:00 00 00 00 00 00 00 00 9D
5300:00 00 00 00 00 00 00 00 A6
5308:00 00 00 00 0A 55 F0 2A 60
5310:55 FC 2A 55 FC AA 40 3F 8D
5318:A2 50 0F A0 54 0F A0 15 45
5320:0F A0 05 CF A0 01 FF A8 C5
5328:00 FF 2A 55 FF 2A 55 FC B9
5330:0A 55 F0 00 00 00 00 00 4F
5338:00 00 00 00 00 00 00 00 DE
5340:00 00 00 00 00 00 00 00 E6
5348:00 00 00 00 00 00 0F 00 0D
5350:00 0F 00 00 0F 00 00 0F 42
5358:AA 55 FF AA 55 FF AA 55 A9
5360:FF 28 00 0F 08 00 0F 08 68
5368:00 0F 00 00 0F 00 00 0F 5A
5370:00 00 00 00 00 00 00 00 17
5378:00 00 00 00 00 00 00 00 1F
5380:00 00 00 00 00 00 00 00 27
5388:00 00 00 00 0A 40 0F 2A C8
5390:50 0F 2A 50 0F AA 54 0F 48
5398:A8 15 0F A0 15 0F A0 05 EF
53A0:0F A0 05 CF A0 01 CF A8 E5
53A8:01 FF A8 01 FF 2A 00 FF 9D
53B0:2A 00 FF 00 00 0F 00 00 A8
53B8:00 00 00 00 00 00 00 00 5F
53C0:00 00 00 00 00 00 00 00 67
53C8:00 00 00 00 0A 01 F0 2A CF
53D0:45 FC 2A 55 FC A8 55 FF 29
53D8:A8 14 3F A0 14 0F A0 14 FC
53E0:0F A0 14 0F A8 00 3F A8 17
53E8:00 3F 28 00 3F 2A 00 FC 04
53F0:0A 00 FC 00 00 00 00 00 3C
53F8:00 00 00 00 00 00 00 00 9F
5400:00 00 00 00 00 00 00 00 A8
5408:00 00 05 00 00 05 00 AA 10
5410:55 FF AA 55 FF AA 55 FF 63
5418:A8 05 00 2A 05 00 2A 05 7A
5420:00 0A 45 00 0A 45 00 02 5B
5428:55 00 02 55 00 00 55 00 BB
5430:00 55 00 00 15 00 00 00 D6
5438:00 00 00 00 00 00 00 00 E0
5440:00 00 00 00 00 00 00 00 E8
5448:00 00 01 C0 A0 05 F0 A0 B8
5450:15 FC A0 15 FC A0 54 3F 7A
5458:A0 54 3F A0 50 0F A0 50 A8
5460:0F A0 50 0F A0 50 3F A0 19
5468:50 3F AA 50 3F AA 50 FC A5
5470:AA 50 FC 00 00 00 00 00 22
5478:00 00 00 00 00 00 00 00 21
5480:00 00 00 00 00 00 00 00 29
5488:00 00 00 00 0A 01 F0 2A 91
5490:05 FC 2A 05 FC A8 15 FF 45
5498:A8 15 3F A0 14 0F A0 14 FE
54A0:0F A0 14 0F A8 14 3F A8 29
54A8:54 3F 2A 55 FF 2A 55 FC 36
54B0:0A 55 F0 00 00 00 00 00 D1
54B8:00 00 00 00 00 00 00 00 61
54C0:00 00 00 00 00 00 00 00 69
54C8:00 00 00 00 A0 00 00 AA 21
```

```
54D0:00 00 AA 50 00 AA 55 00 29
54D8:AA 55 F0 A0 55 FF A0 05 45
54E0:FF A0 00 FF A0 00 0F A0 75
54E8:00 00 A0 00 00 A0 00 00 28
54F0:00 00 00 00 00 00 00 00 99
54F8:00 00 00 00 00 00 00 00 A1
5500:00 00 00 00 00 00 00 00 AA
5508:00 00 00 00 0A 01 F0 2A 13
5510:45 FC 2A 55 FC A8 55 FF 6C
5518:A8 14 3F A0 14 0F A0 14 40
5520:0F A0 14 0F A8 14 0F A8 4A
5528:55 3F 2A 55 FF 2A 41 FC 10
5530:0A 00 F0 00 00 00 00 00 FD
5538:00 00 00 00 00 00 00 00 E2
5540:00 00 00 00 00 00 00 00 EA
5548:00 00 00 00 0A 55 F0 2A A4
5550:55 FC AA 55 FC A8 15 3F 83
5558:A8 14 3F A0 14 0F A0 14 80
5560:0F A0 14 0F A8 14 3F AA EC
5568:54 3F 2A 50 FC 2A 50 FC 85
5570:0A 40 F0 00 00 00 00 00 4E
5578:00 00 00 00 00 00 00 00 23
5580:00 00 00 00 00 00 00 00 2B
5588:00 00 00 00 00 00 00 00 33
5590:00 00 00 00 00 00 00 00 3B
5598:0A 41 F0 0A 41 F0 0A 41 7A
55A0:F0 00 00 00 00 00 00 00 C3
55A8:00 00 00 00 00 00 00 00 53
55B0:00 00 00 00 00 00 00 00 5B
55B8:00 00 00 00 00 00 00 00 63
55C0:00 00 00 00 00 00 00 00 6B
55C8:00 00 00 00 00 00 00 00 73
55D0:00 00 00 00 00 00 00 00 7B
55D8:0A 41 F0 0A 41 FC 0A 41 EA
55E0:FC 00 00 0C 00 00 00 00 CA
55E8:00 00 00 00 00 00 00 00 93
55F0:00 00 00 00 00 00 00 00 9B
55F8:00 00 00 00 00 00 00 00 A3
5600:00 00 00 00 00 00 00 00 AC
5608:00 00 00 00 0A 40 00 2A 30
5610:50 00 2A 50 00 A8 54 00 7A
5618:A8 14 00 A0 14 00 A0 14 1E
5620:00 A0 14 00 A8 15 CF A8 59
5628:15 CF 2A 15 CF 2A 00 00 11
5630:0A 00 00 00 00 00 00 00 E1
5638:00 00 00 00 00 00 00 00 E4
5640:00 00 00 00 00 00 00 00 EC
5648:00 00 00 0F 00 00 FF 00 E5
5650:05 FF 00 55 F0 0A 55 C0 EF
5658:AA 51 C0 AA 01 C0 AA 01 D2
5660:C0 AA 01 C0 AA 51 C0 0A 6A
5668:55 C0 00 55 F0 00 05 FF D6
5670:00 00 FF 00 00 0F 00 00 59
5678:00 00 00 00 00 00 00 00 25
5680:00 00 00 00 00 00 00 00 2D
5688:00 0A 00 F0 2A 41 FC AA C1
5690:41 FF A0 55 3F A0 14 0F FA
5698:A0 14 0F A0 14 0F A0 14 B8
56A0:0F A0 14 0F A0 14 0F A0 84
56A8:14 0F AA 55 FF AA 55 FF 23
56B0:A0 00 0F A0 00 0F 00 00 D5
56B8:00 00 00 00 00 00 00 00 65
56C0:00 00 00 00 00 00 00 00 6D
56C8:00 0A 00 F0 2A 01 FC 2A 80
56D0:00 FC A8 00 3F A8 00 3F AD
56D8:A0 00 0F A0 00 0F A0 00 3F
56E0:0F A8 00 3F A8 00 3F A8 9F
56E8:00 3F 2A 00 FC 2A 55 FC E2
56F0:0A 55 F0 02 55 C0 00 00 E3
56F8:00 00 00 00 00 00 00 00 A5
```

```
5700:00 00 00 00 00 00 00 00 AE
5708:00 00 55 00 0A 55 F0 2A 13
5710:55 FC 2A 41 FC A8 00 3F CB
5718:A8 00 3F A0 00 0F A0 00 8A
5720:0F A0 00 0F A0 00 0F AA 3D
5728:55 FF AA 55 FF AA 55 FF 81
5730:A0 00 0F A0 00 0F 00 00 57
5738:00 00 00 00 00 00 00 00 E6
5740:00 00 00 00 00 00 00 00 EE
5748:00 A8 00 3F A8 00 3F A0 79
5750:00 0F A0 55 0F A0 55 0F E0
5758:A0 14 0F A0 14 0F A0 14 7A
5760:0F A0 14 0F A0 14 0F A0 46
5768:14 0F AA 55 FF AA 55 FF E4
5770:A0 00 0F A0 00 0F 00 00 97
5778:00 00 00 00 00 00 00 00 27
5780:00 00 00 00 00 00 00 00 2F
5788:00 A8 00 00 A8 00 00 A0 47
5790:00 00 A0 55 00 A0 55 00 D5
5798:A0 14 00 A0 14 00 A0 14 9C
57A0:00 A0 14 00 A0 14 0F A0 0E
57A8:14 0F AA 55 FF AA 55 FF 25
57B0:A0 00 0F A0 00 0F 00 00 D7
57B8:00 00 00 00 00 00 00 00 67
57C0:00 00 00 00 00 00 00 00 6F
57C8:00 0A 05 FC 2A 05 CC 2A 93
57D0:05 F0 A8 05 FC A8 05 3F 77
57D8:A0 05 3F A0 00 0F A0 00 88
57E0:0F A8 00 3F A8 00 3F A8 A1
57E8:00 3F 2A 00 FC 2A 55 FC E4
57F0:0A 55 F0 02 55 C0 00 00 E5
57F8:00 00 00 00 00 00 00 00 A7
5800:00 00 00 00 00 00 00 00 B0
5808:00 A0 00 0F A0 00 0F AA 9F
5810:55 FF AA 55 FF AA 55 FF 6B
5818:A0 14 0F A0 14 00 00 14 BE
5820:00 A0 14 00 A0 14 0F AA 99
5828:55 FF AA 55 FF AA 55 FF 83
5830:A0 00 0F A0 00 0F 00 00 59
5838:00 00 00 00 00 00 00 00 E8
5840:00 00 00 00 00 00 00 00 F0
5848:00 A8 00 3F A8 00 3F A0 7B
5850:00 0F A0 00 0F A0 00 0F E2
5858:A0 00 0F AA 55 FF AA 55 3B
5860:FF AA 55 FF A0 00 0F A0 2A
5868:00 0F A0 00 0F A0 00 0F FA
5870:A8 00 3F A8 00 3F 00 00 E4
5878:00 00 00 00 00 00 00 00 29
5880:00 00 00 00 00 00 00 00 31
5888:00 A8 00 00 A8 00 00 A0 49
5890:00 00 A0 00 00 AA 55 F0 9B
5898:AA 55 FC AA 55 FF A0 00 2A
58A0:3F A0 00 0F A0 00 0F A8 D5
58A8:00 0F A8 00 0F 00 14 3F 12
58B0:00 15 FC 00 15 F0 00 00 B2
58B8:00 00 00 00 00 00 00 00 69
58C0:00 00 00 00 00 00 00 00 71
58C8:00 A0 00 0F A8 00 0F A8 9E
58D0:00 3F 2A 00 3C 0A 00 FC 9D
58D8:0A 40 F0 02 51 F0 02 55 84
58E0:C0 00 55 C0 00 55 00 00 FD
58E8:15 00 AA 55 FF AA 55 FF 24
58F0:A0 00 0F A0 00 0F 00 00 1A
58F8:00 00 00 00 00 00 00 00 A9
5900:00 00 00 00 00 00 00 00 B2
5908:00 00 00 3F 00 00 3F 00 2D
5910:00 0F 00 00 0F 00 00 0F 0E
5918:00 00 0F 00 00 0F 00 00 E8
5920:0F A0 00 0F A0 00 0F AA 41
5928:55 FF AA 55 FF AA 55 FF 85
```

```
5930:A0 00 0F A0 00 0F 00 00 5B
5938:00 00 00 00 00 00 00 00 EA
5940:00 00 00 00 00 00 00 00 F2
5948:00 00 00 0F AA 55 FF AA 41
5950:55 FF 2A 55 FF 0A 40 00 F0
5958:02 40 00 02 50 00 00 54 13
5960:00 02 54 00 02 50 00 0A 79
5968:40 00 2A 55 FF AA 55 FF 2B
5970:AA 55 FF 00 00 0F 00 00 0A
5978:00 00 00 00 00 00 00 00 2B
5980:00 00 00 00 00 00 00 00 33
5988:00 AA 55 FF AA 55 FF AA E5
5990:55 FF A0 00 FC A0 01 F0 5F
5998:00 05 C0 00 15 00 00 54 A1
59A0:00 02 50 00 0A 40 00 2A 59
59A8:55 FF AA 55 FF AA 55 FF 06
59B0:00 00 0F 00 00 0F 00 00 81
59B8:00 00 00 00 00 00 00 00 6B
59C0:00 00 00 00 00 00 00 00 73
59C8:00 0A 55 F0 2A 55 FC 2A 82
59D0:55 FC A8 00 3F A8 00 3F 5E
59D8:A0 00 0F A0 00 0F A0 00 45
59E0:0F A0 00 0F A0 00 0F A8 FF
59E8:00 3F 28 00 3C 2A 55 FC A2
59F0:0A 55 F0 02 55 C0 00 00 E9
59F8:00 00 00 00 00 00 00 00 AB
5A00:00 00 00 00 00 00 00 00 B4
5A08:00 0A 50 00 2A 54 00 2A 16
5A10:54 00 AA 55 00 A8 15 00 66
5A18:A0 05 00 A0 05 00 A0 05 D6
5A20:00 A0 05 00 A0 05 00 A0 57
5A28:05 00 AA 55 FF AA 55 FF 5F
5A30:A0 00 0F A0 00 0F 00 00 5D
5A38:00 00 00 00 00 00 00 00 EC
5A40:00 00 00 00 00 00 00 00 F4
5A48:00 0A 55 C3 2A 55 FF 2A 37
5A50:55 FC A8 00 FF A8 01 FF A8
5A58:A0 01 CF A0 00 0F A0 00 1F
5A60:0F A0 00 0F A0 00 0F A8 81
5A68:00 3F 28 00 3C 2A 55 FC 24
5A70:0A 55 F0 02 55 C0 00 00 6B
5A78:00 00 00 00 00 00 00 00 2D
5A80:00 00 00 00 00 00 00 00 35
5A88:00 00 00 0F 0A 40 0F 2A C7
5A90:50 3F AA 50 3C A0 14 FC 21
5A98:A0 14 F0 A0 15 F0 A0 15 8D
5AA0:C0 A0 15 C0 A0 15 00 A0 86
5AA8:15 00 AA 55 FF AA 55 FF E7
5AB0:A0 00 0F A0 00 0F 00 00 DD
5AB8:00 00 00 00 00 00 00 00 6D
5AC0:00 00 00 00 00 00 00 00 75
5AC8:00 00 00 00 0A 01 F0 2A DD
5AD0:05 FC 2A 05 FC A8 15 3F D0
5AD8:A8 14 0F A0 14 0F A0 14 05
5AE0:0F A0 14 0F A8 14 0F A8 15
5AE8:54 3F 2A 50 3F 2A 50 FC 22
5AF0:0A 40 FC 00 00 00 00 00 5A
5AF8:00 00 00 00 00 00 00 00 AD
5B00:00 00 00 00 00 00 00 00 B6
5B08:00 A8 00 00 A8 00 00 A0 CE
5B10:00 00 A0 00 00 A0 00 0F 6C
5B18:A0 00 0F AA 55 FF AA 55 01
5B20:FF AA 55 FF A0 00 0F A0 EF
5B28:00 0F A0 00 00 A0 00 00 39
5B30:A8 00 00 A8 00 00 00 00 C5
5B38:00 00 00 00 00 00 00 00 EE
5B40:00 00 00 00 00 00 00 00 F6
5B48:00 AA 55 C0 AA 55 F0 AA 97
5B50:55 F0 A0 00 3C 00 00 3F 23
5B58:00 00 0F 00 00 0F 00 00 2D
```

```
5B60:0F 00 00 0F 00 00 3F A0 AE
5B68:00 3C AA 55 FC AA 55 F0 07
5B70:AA 55 C0 00 00 00 00 00 E9
5B78:00 00 00 00 00 00 00 00 2F
5B80:00 00 00 00 00 00 00 00 37
5B88:00 A0 00 00 AA 40 00 AA 68
5B90:54 00 AA 55 C0 00 55 FC C9
5B98:00 05 FF 00 00 FF 00 00 90
5BA0:3F 00 00 FF 00 05 FF 00 0B
5BA8:55 FC AA 55 C0 AA 54 00 4D
5BB0:AA 40 00 A0 00 00 00 00 D6
5BB8:00 00 00 00 00 00 00 00 6F
5BC0:00 00 00 00 00 00 00 00 77
5BC8:00 A0 00 00 AA 55 FF AA FC
5BD0:55 FF AA 55 FC A0 01 F0 3A
5BD8:00 05 C0 00 15 C0 00 15 A9
5BE0:00 00 05 C0 00 01 C0 A0 6A
5BE8:01 F0 AA 55 FC AA 55 FF 44
5BF0:AA 55 FF A0 00 00 00 00 5C
5BF8:00 00 00 00 00 00 00 00 AF
5C00:00 00 00 00 00 00 00 00 B8
5C08:00 A0 00 0F A8 00 0F A8 E5
5C10:00 0F 2A 00 3C 0A 40 FC 59
5C18:02 51 F0 00 55 C0 00 15 07
5C20:00 00 15 00 00 55 C0 02 54
5C28:51 F0 0A 40 FC 2A 00 3F DA
5C30:A8 00 0F A0 00 0F 00 00 65
5C38:00 00 00 00 00 00 00 00 F0
5C40:00 00 00 00 00 00 00 00 F8
5C48:00 00 00 00 A0 00 00 A8 AE
5C50:00 00 2A 00 00 0A 40 0F 06
5C58:02 50 0F 00 55 FF 00 15 C7
5C60:FF 00 15 FF 00 54 0F 02 2D
5C68:50 0F 0A 40 00 2A 00 00 FA
5C70:A8 00 00 A0 00 00 00 00 87
5C78:00 00 00 00 00 00 00 00 31
5C80:00 00 00 00 00 00 00 00 39
5C88:00 A8 00 FF AA 00 FF AA 6B
5C90:00 0F A2 40 0F A2 40 0F F7
5C98:A0 50 0F A0 50 0F A0 14 B5
5CA0:0F A0 14 0F A0 05 0F A0 54
5CA8:05 0F A0 01 CF A0 01 FF CE
5CB0:AA 00 FF AA 00 3F 00 00 66
5CB8:00 00 00 00 00 00 00 00 71
5CC0:00 00 00 00 00 00 00 00 79
```

VERTISCROLL

```
MS 10 REM COPYRIGHT 1993 - COM
      PUTE PUBLICATIONS INTL L
      TD - ALL RIGHTS RESERVED
PX 20 IF A=0THENA=1:LOAD"VS.CO
      DE",8,1
DH 30 IF B=0THENB=1:LOAD"VS.LE
      TTERS",8,1
DG 40 S=16928:E=17407
BE 50 PRINT"{CLR}{3 DOWN}{WHT}
      {4 SPACES}VERTISCROLL -
      {SPACE}SCROLL TEXT EDITO
      R"
QH 60 PRINT"{3 DOWN} PRESS SPA
      CE TO ENTER THE TEXT EDI
      TOR."
RC 70 PRINT"{DOWN} YOU CAN USE
       12 LINES MAXIMUM."
KS 80 PRINT"{DOWN} PLEASE TYPE
       AN @ AT THE END OF YOUR
QS 90 PRINT"{DOWN} TEXT AND PR
      ESS RETURN TO STORE."
FP 100 GET A$:IF A$<>" "THEN10
```

```
        0
MX 110  PRINT"{CLR}";:OPEN 1,0:
        INPUT#1,T$:CLOSE1
DB 120  FOR X=1024 TO 1503:POKE
         S+X-1024,PEEK(X):POKE
        {SPACE}X,42:NEXT
AM 130  PRINT"{CLR}{3 DOWN}PRES
        S SPACE TO SEE YOUR VER
        TISCROLL."
EQ 140  GET A$:IF A$<>" "THEN14
        0
FX 150  SYS16384
JC 160  PRINT"{CLR}{3 DOWN}PRES
        S 'S' TO SAVE, OR 'E' T
        O EDIT."
SE 170  GET K$:IFK$=""THEN170
QA 180  IF K$="E"THEN SYS 16387
        :GOTO40
PF 190  SYS16387
RR 200  INPUT"{2 DOWN}SAVE FILE
        NAME";F$
JP 210  F$="@0:"+F$:OPEN1,8,1,F
        $:POKE252,S/256:POKE251
        ,S-PEEK(252)*256
XM 220  POKE782,E/256:POKE781,E
        -PEEK(782)*256:POKE780,
        251:SYS65496:CLOSE1
JB 230  PRINT"{7}"
CH 240  IF ST<>0THEN PRINT"
        {2 DOWN}ERROR DURING SA
        VE!":END
```

Daniel English is a frequent contributor. He hopes someday to open his own business to create and distribute software for the 64 and Amiga. He lives in Moreno Valley, California.

EASY DOES IT

By Hugh Rountree

Erasable programmable read only memory, better known as EPROM, is a great concept. It lets you load your favorite programs onto a cartridge that plugs into your 64 or 128, and these programs are instantly available whenever you boot your computer. Whatever is stored in an EPROM chip acts like regular ROM, but you can erase the chip and refill it with other programs whenever you wish.

I purchased a Promenade C1 EPROM programming device about six or seven years ago from the Jason-Ranheim Company, but I'll have to confess that I've used it very little until recently. There are two main reasons for this.

First of all, Motorola's EPROM 68766, the 24-pin 8K × 8-bit version of the 2764 found in early Commodores, was priced at five times the cost of the 2764 original. The Motorola chip was the only EPROM that would exactly replace the ROM IC's used in Commodore's early computers and disk drives.

Second, the original Promos software that came with Promenade was for experienced programmers. It was complicated to use. You had to swap back and forth from the Promos' BASIC environment to a machine language monitor such as Micromon, Supermon, or Hesmon.

During the past several years, however, the price of the 68766 has dropped from approximately $25.00 to less than $5.00 each. The last ones that I purchased from Jameco cost $4.75 each. So now I can afford to program all of the EPROMs that I wish for all of my Commodore equipment.

In contacting Jason-Ranheim, I learned that they now have a version 2 of Promos, which has many added commands, including most of those found in a ML monitor. Also Promos had been altered so that you can enter manual commands with hexadecimal numbers instead of decimal. Another improvement is that commands can be executed from within a BASIC program using integer variables, which of course work only with decimal numbers.

Since I prefer entry in hex instead of decimal, that meant I had to use a hex-to-decimal conversion routine. So when I got the new Promos software, I began writing Easy Does It to augment the superb qualities of Promos V2.0.

Typing It In

Easy Does It is written entirely in BASIC. To help avoid typing errors, enter it with The Automatic Proofreader. See "Typing Aids" elsewhere in this section. Be sure to save a copy of the program before you attempt to run it. I have also included a boot program that will automatically load and run Easy Does It and Promos. Make sure that all of these programs are on the same disk.

When Easy Does It loads Promos, you'll see the following menu.

```
Zero Socket—Z
Fill Memory(Zero)—F
Check Eprom/Erasure—E
Load Disk File—L
Save Disk File—S
Set Eprom PaRAMeter—P
Set Ram Addresses—ADD
Read Eprom—R
Write Eprom—W
Write Eprom/Verify—VER
Verify Eprom/Ram—V
? h
```

If you notice, the letter *H* appears beneath the cursor. If you hit the Return key with the *H* showing, you'll find yourself viewing an auxiliary help screen. It looks something like the following.

```
COMMAND ADDENDUM

( M/I/D/A/C/T)

TOGGLE (CHECKSUM OFF)
```

Each letter is a different command to enter. These commands are similar to those found in ML Monitors such as Supermon or Micromon. M is the memory command used to view the hex value of memory addresses.

I displays the ASCII value of these same addresses.

D for data lets you view the hex value of addresses read directly from an EPROM installed in the Promenade socket.

A displays the ASCII value of these EPROM addresses.

C lets you compare one range of RAM addresses to another range.

T transfers the data from one RAM address range to another.

Toggle will in effect enable the checksum and hash total reporting built into Promos. This feature is normally lost when Promos commands are executed from BASIC.

Be careful using the Toggle command because it works by taking the computer out of BASIC mode and putting it into manual mode. If you have a DOS wedge installed with Promos and operate a BASIC program in manual mode, should you inadvertently enter a wedge command from the keyboard, the DOS command may respond with disastrous results. I have had a whole disk directory scrambled by inadvertently entering a DOS command in these circumstances. I recommend operating in Checksum Off mode when possible.

Using Easy Does It

Easy Does It makes it no longer necessary to figure out and enter the correct control word or program method numbers. They are automatically selected from a built-in database within the program. All that is required for automatic selection of these values is entry of the program voltage and the EPROM type.

When you enter a *P* to set EPROM parameters, you will be asked to enter the voltage, EPROM type, and also the EPROM start address. The EPROM end address will be automatically set for the last byte of the EPROM itself. The RAM hex start and end addresses control how many bytes will be programmed, which you are asked to enter upon entry of the Add command or Set RAM Addresses.

The Zero Socket command, Z, sets all pins of the EPROM socket to 0 voltage. The Fill Memory command, F, fills the memory address range between the RAM hex start address and the RAM hex end address. The Check EPROM/Erasure command, E, checks to see if the EPROM is in an erased state (all FF) from the EPROM start address to the EPROM end address.

The Load Disk File command, L, will load a disk file with the specified filename to RAM beginning at the RAM hex start address. The Save Disk File will save RAM contents beginning with the RAM hex start address and ending with the RAM hex end address. If you enter any disk file commands accidentally, you may return to the menu by pressing Return on a blank filename.

The Read EPROM command, R, reads data from the EPROM start address to RAM beginning at the RAM hex start address and ending at the RAM hex end address.

The Write EPROM command, W, programs an EPROM beginning at the EPROM start address with code beginning at the RAM hex start address and ending at the RAM hex end address. The Write EPROM/Verify command, VER, first performs an Erasure, E, command, and then if it passes this command, it begins a W command. After this command finishes, it then does a V command.

The Verify EPROM/RAM command, V, verifies that the code in the EPROM beginning at the EPROM start address is identical with code beginning with the RAM hex start address and ending with the RAM hex end address.

Once entered, all of the data except for the main menu input and the filename inputs will stay with the last entered value. Simply press Return to retain the earlier data at the appropriate prompt.

I could have created a much longer BASIC program with more features, but I decided that it was best to keep it as short as possible and leave a larger RAM buffer for use in holding code for programming EPROMs. Jason-Ranheim advises leaving 14K of RAM for the BASIC program. Warning: Promos V2.0 will not allow disk file saves above $CFFF.

Upon running, Easy Does It sheds a little excess baggage by deleting the first seven lines (10–70) of the program when they execute. Otherwise, the program would give an *OUT OF MEMORY* error message and refuse to run before all of the variables were executed. The first 70 lines are REM statements for information on the program, creating the RAM buffer by moving the top of BASIC down to $1FFF, filling memory from hex 2000 to hex DFFF with zeros, and finally deleting the first 70 lines, whereupon the program runs again beginning with line 80.

If you own a Promenade EPROM device and don't have the latest Promos V2.0 software with a manual, you may order it for $29.95 on a 5¼-inch disk or $32.95 on a 3½-inch disk. The address is Jason-Ranheim Company, 3105 Gayle Lane, Auburn, California 95602; (800) 421-7731. The company also carries EPROM supplies.

BOOT

```
PK 5 REM COPYRIGHT 1993 - COMP
     UTE PUBLICATIONS INTL LTD
      - ALL RIGHTS RESERVED
QS 10 REM BOOT PROGRAM FOR EAS
      Y DOES IT & PROMOS V2.0
      {SPACE}BY HUGH ROUNTREE
DF 20 D$="8":D=PEEK(186):IFD>7
      THEND$=RIGHT$(STR$(D),LE
      N(STR$(D))-1)
FR 30 PRINTCHR$(147):PRINT:PRI
      NT"LOAD";CHR$(34);"PB";C
      HR$(34);",“D$",1"
KE 40 FORI=1TO9:PRINTCHR$(13);
      :NEXT:PRINT"POKE56,32:NE
      W":PRINT:PRINT
CP 50 PRINT"LOAD";CHR$(34);"EA
      SY DOES IT";CHR$(34);","
      D$;CHR$(19);
KJ 60 FORI=631TO633:READDA:POK
      EI,DA:NEXTI:POKE198,3:NE
      W:DATA13,13,131
```

EASY DOES IT

```
KD 10 REM EASY DOES IT BY HUGH
       ROUNTREE COPYRIGHT 1993
       - COMPUTE PUBLICATIONS
RS 20 REM*ENABLE PROMOS V2.0 P
      REVIOUSLY*LINES 10-70 AU
      TO-DELETE WHEN PROGRAM R
      UNS*
AA 30 REM*SET W=1 IN LINE 90 T
      O DISABLE SOUND TONE*
HG 40 PRINTCHR$(147);"
      {7 SPACES}AUTO-DELETING
      {SPACE}LINES{2 SPACES}10
      -70":PRINT
PX 50 PRINT"10":PRINT"20":PRIN
      T"30":PRINT"40":PRINT"50
      ":PRINT"60":PRINT"70"
GR 60 PRINT"F 2000,DFFF,00:RUN
      ";CHR$(19);
DD 70 FORI=1TO8:POKE630+I,13:N
      EXT:POKE198,8:POKE56,32:
      END
HS 80 DIMH(15),W(8,3),PM(8,3),
      CA(7),A$(4),D$(2),R$(7),
      X$(4):FORI=1TO4:READDV(I
      )
PX 90 NEXT:FORI=1TO8:READE$(I)
      :FORIA=1TO3:READW(I,IA),
      PM(I,IA):NEXT:NEXT:W=0
RR 100 DATA4096,256,16,1,"07FF
       ",42,70,0,0,40,71,"0FFF
       ",226,70,225,7,224,7
XA 110 DATA"1FFF",6,14,5,14,20
       ,14,"3FFF",6,14,5,14,0,
       0,"7FFF",230,70,229,70,
       0,0
GP 120 DATA"FFFF",226,6,0,0,0,
       0,"1FFF",0,0,0,0,48,70,
       "03FF",0,0,0,0,40,7
PR 130 TG$(0)="OFF)":TG$(1)="
       {SPACE}ON)":IA=48:FORI=
       0TO15:H(I)=I+IA:IFI=9TH
       ENIA=55
MM 140 NEXT:D$(1)="COMPARE":D$
       (2)="TRANSFER":R$(1)="L
       OW UNERASED BYTE"
CK 150 R$(2)="HIGH BYTE LOADED
       ":R$(3)="HIGH BYTE SAVE
       D":R$(4)="HIGH BYTE REA
       D"
FJ 160 R$(5)="FAIL ADDRESS":R$
       (6)=R$(5):R$(7)=R$(5)
XF 170 A$(1)="START":A$(2)="EN
       D":A$(3)="COMPARE":A$(4
       )="TRANSFER"
KD 180 C$(1)="ERASURE":C$(2)="
       DISK LOAD":C$(3)="DISK
       {SPACE}SAVE":C$(4)="REA
       D EPROM"
AX 190 C$(5)="WRITE EPROM":C$(
       6)="VERIFY EPROM":C$(7)
       ="COMPARE RAM":S$="
       {8 SPACES}"
```

```
SK 200 K$(1)="PASSED":K$(2)="F
       AILED":DN%=8:DN=PEEK(18
       6):IFDN>7THENDN%=DN
AH 210 PRINTCHR$(147)CHR$(14)S
       $S$"PROMENADE"
PQ 220 PRINT:PRINTS$"ZERO SOCK
       ET----------> Z"
CD 230 PRINT:PRINTS$"FILL MEMO
       RY(ZERO)---> F"
EF 240 PRINT:PRINTS$"CHECK EPR
       OM/ERASURE-> E"
KF 250 PRINT:PRINTS$"LOAD DISK
        FILE------> L"
MA 260 PRINT:PRINTS$"SAVE DISK
        FILE------> S"
SC 270 PRINT:PRINTS$"SET EPROM
        PARAMETER-> P"
AG 280 PRINT:PRINTS$"SET RAM A
       DDRESSES--->ADD"
EC 290 PRINT:PRINTS$"READ EPRO
       M----------> R"
EA 300 PRINT:PRINTS$"WRITE EPR
       OM---------> W"
EG 310 PRINT:PRINTS$"WRITE EPR
       OM/VERIFY-->VER"
BK 320 PRINT:PRINTS$"VERIFY EP
       ROM/RAM----> V"
FH 330 PRINT:PRINTS$"
       {2 SPACES}H{3 LEFT}";:I
       NPUT C$
FP 340 IFC$="Z"THENGOSUB540:GO
       SUB550
PK 350 IFC$="F"THENGOSUB540:GO
       SUB830:GOSUB560
SE 360 IFC$="E"THENGOSUB540:CM
       =1:GOSUB600:CM=0
BJ 370 IFC$="L"THENGOSUB540:CM
       =2:GOSUB620:CM=0
CB 380 IFC$="S"THENGOSUB540:GO
       SUB1380:IFEA<53248THENC
       M=3:GOSUB650:CM=0
JB 390 IFC$="P"THENGOSUB540:GO
       SUB680
HP 400 IFC$="ADD"THENGOSUB540:
       GOSUB830
AR 410 IFC$="R"THENGOSUB540:CM
       =4:GOSUB890:CM=0
MJ 420 IFC$="W"THENGOSUB540:CM
       =5:GOSUB900:CM=0
GP 430 IFC$="VER"THENGOSUB540:
       CM=1:GOSUB910:CM=0
BH 440 IFC$="V"THENGOSUB540:CM
       =6:GOSUB970:CM=0
HE 450 IFC$="H"THENGOSUB540:GO
       SUB980
RD 460 IFC$="M"THENGOSUB540:GO
       SUB1290
PB 470 IFC$="I"THENGOSUB540:GO
       SUB1300
RB 480 IFC$="D"THENGOSUB540:GO
       SUB1310
DB 490 IFC$="A"THENGOSUB540:GO
       SUB1320
DG 500 IFC$="C"THENGOSUB540:CM
       =7:GOSUB1350:CM=0
SJ 510 IFC$="T"THENGOSUB540:GO
       SUB1370
SR 520 IFC$="TOGGLE"THENGOSUB5
       40:GOSUB1400
BC 530 GOTO210
BS 540 PRINTCHR$(147)CHR$(142)
       :RETURN
QQ 550 Z:RETURN
FQ 560 BY%=0:PRINT"{2 SPACES}E
       NTER VALUE FOR MEMORY F
       ILL"
EM 570 PRINT"{2 SPACES}HEX ($0
       0-$FF) ";:INPUTB$:L=LEN
       (B$):IFL<>2THENGOTO560
MG 580 H$="00"+B$:HA=0:GOSUB10
       40:IFHA<0ORHA>255THEN56
       0
DF 590 BY%=HA%:F BA%,EA%,BY%:R
       ETURN
EX 600 IFEE%=0ORCW%=0THENGOSUB
       680
JF 610 E ES%,EE%,CW%:GOSUB1220
       :RETURN
HQ 620 IFBA%=0THENGOSUB830
AA 630 GOSUB1000:IFN$=""THENRE
       TURN
HG 640 L N$,DN%,BA%:GOSUB1220:
       RETURN
JE 650 IFBA%=0ANDEA%=0THENGOSU
       B830
QR 660 GOSUB1000:IFN$=""THENRE
       TURN
DX 670 S N$,DN%,BA%,EA%:GOSUB1
       220:RETURN
QG 680 PRINT"{2 SPACES}ENTER P
       ROGRAM VOLTS(12.5/21/25
       )":PRINT"{2 SPACES}";:I
       NPUTV$
CJ 690 IFV$<>"12.5"ANDV$<>"21"
       ANDV$<>"25"THENGOTO680
RQ 700 PV=1:IFVAL(V$)>12.5THEN
       PV=2:IFVAL(V$)>21THENPV
       =3
XM 710 PRINT:PRINT"{2 SPACES}E
       NTER EPROM TYPE(2758/27
       16/2732/2764)"
EG 720 PRINT"{2 SPACES}(27128/
       27256/27512/68764/68766
       /68769)"
JQ 730 PRINT"{2 SPACES}";:INPU
       TP$:IFP$="68764"ORP$="6
       8769"THENP$="68766"
GC 740 OK=1:IFP$<>"2758"ANDP$<
       >"2716"ANDP$<>"2732"AND
       P$<>"2764"THENOK=0
QS 750 IFOK=0ANDP$<>"27128"AND
       P$<>"27256"ANDP$<>"2751
       2"ANDP$<>"68766"THENGOT
       O710
SS 760 BT=16:S=1:PRINT"
       {2 SPACES}";:L=LEN(P$):
       ET=VAL(RIGHT$(P$,L-2)):
       ML=2:GOSUB1130
JH 770 PRINT:IFCW%=0ORPM%=0THE
       NGOSUB1160:GOTO680
HE 780 H$=E$(S):EA$(2)=H$:HA=0
       :GOSUB1040:MA=HA:EE%=HA
       %:A1=1:GOSUB790:ES%=HA%
       :RETURN
XM 790 PRINT"{2 SPACES}ENTER E
       PROM "A$(A1)" ADDRESS":
       E$=H$:IFA1=1THENLA=0:E$
       ="00"
QK 800 PRINT"{2 SPACES}($"E$"-
       $";E$(S);") ";:INPUTEA$
       (A1)
BD 810 PRINT:H$=RIGHT$("0000"+
       EA$(A1),4):HA=0:GOSUB10
       40:IFHA<LAORHA>MATHEN79
       0
MJ 820 RETURN
AC 830 A1=1:CA=8192:GOSUB840:B
       A=HA:BA%=HA%:A1=2:CA=BA
       :GOSUB840:EA=HA:EA%=HA%
       :RETURN
QF 840 PRINT"{2 SPACES}ENTER R
       AM "A$(A1)" HEX ADDRESS
       ":X$=X$(1):IFA1<>2THENX
       $="2000"
CB 850 PRINT"{2 SPACES}$"X$"-$
       DFFF) ";:INPUTX$(A1):PR
       INT
HG 860 L=LEN(X$(A1)):IFL<>4THE
       N840
FP 870 H$=X$(A1):HA=0:GOSUB104
       0:IFHA<CAORHA>57343THEN
       840
CX 880 RETURN
RR 890 GOSUB930:R BA%,EA%,ES%,
       CW%:GOSUB1220:RETURN
HA 900 GOSUB930:GOSUB960:RETUR
       N
CC 910 GOSUB600:CM=5:IFCK=2THE
       N1170
XP 920 GOSUB930:GOSUB960:CM=6:
       GOSUB970:RETURN
XE 930 IFBA%=0OREA%=0THENGOSUB
       830
AA 940 IFCW%=0ORPM%=0THENGOSUB
       680
CD 950 RETURN
FM 960 P BA%,EA%,ES%,CW%,PM%:G
       OSUB1220:RETURN
PF 970 GOSUB930:V BA%,EA%,ES%,
       CW%:GOSUB1220:RETURN
QP 980 PRINTS$"{3 SPACES}COMMA
       ND{2 SPACES}ADDENDUM":P
       RINT:PRINT"{7 SPACES}(
       {SPACE}M / I / D / A /
       {SPACE}C / T )"
FJ 990 PRINT:PRINTS$" TOGGLE (
       CHECKSUM "TG$(TG):GOTO1
       170
KP 1000 N$="":PRINT:PRINT"
        {2 SPACES}ENTER FILENA
        ME"
GB 1010 PRINT"{2 SPACES}";:INP
        UTN$:PRINT:IFN$=""THEN
        RETURN
DH 1020 IFN$=","ORN$="?"ORN$="
        *"ORN$="@"ORN$=";"ORN$
        ="."THENGOTO1000
SB 1030 RETURN
QR 1040 L=LEN(H$):FORI=LTO1STE
        P-1:B=16:A=ASC(MID$(H$
        ,I,1)):IFA>47ANDA<58TH
```

```
          EN1060
SP 1050 FA=0:IFA<65ORA>70THENF
          A=1:GOTO1070
AP 1060 GOSUB1090
FB 1070 NEXTI:IFFATHENFA=0:HA=
          -1:RETURN
RP 1080 GOSUB1120:RETURN
QE 1090 B=B-1:IFH(B)>ATHEN1090
XE 1100 GOSUB1110:RETURN
GX 1110 HA=HA+(B*DV(I)):RETURN
PR 1120 HA%=HA+65536*(HA>32767
          ):RETURN
CK 1130 RE=ET-BT:BT=BT*ML:IFRE
          THENS=S+1:IFS>6THENML=
          1:BT=766:IFS>7THENBT=5
          8
JH 1140 IFRETHENGOTO1130
XM 1150 CW%=W(S,PV):PM%=PM(S,P
          V):ML=2:RETURN
DS 1160 PRINTS$"SELECTED EPROM
           TYPE AND":PRINTS$"PGM
          . VOLTAGE NOT VALID."
ER 1170 PRINT:PRINT"{6 SPACES}
          -PRESS ANY KEY TO CONT
          INUE-":PRINT:IFWTHEN12
          00
FQ 1180 POKE54296,15:POKE54278
          ,89:POKE54276,33
AG 1190 POKE54273,34:POKE54272
          ,75:FORI=1TO100:NEXT:P
          OKE54273,45:POKE54272,
          90
KD 1200 GETA$:IFA$=""THENONW+1
          GOTO1190,1200
XG 1210 POKE54296,0:RETURN
GH 1220 AD=PEEK(166)+256*PEEK(
          167)
CP 1230 IFPEEK(165)=0THENCK=1:
          IFCM>4THEN1260
GG 1240 PRINT:IFPEEK(165)=255T
          HENCK=2
PB 1250 IFCM>1ORCK=2THENPRINT"
           "AD"= ADDRESS OF "R$(
          CM)
QQ 1260 POKE165,0:POKE166,0:PO
          KE167,0:IFCM<>4THENPRI
          NT"{2 SPACES}"C$(CM)"
          {SPACE}COMMAND "K$(CK)
MJ 1270 IFC$="VER"THENIFCM=1OR
          CM=5THENRETURN
KC 1280 GOTO1170
JD 1290 GOSUB830:M BA%,EA%:PRI
          NT:GOTO1170
BS 1300 GOSUB830:I BA%,EA%:PRI
          NT:GOTO1170
PA 1310 GOSUB1330:D ES%,EE%,CW
          %:GOTO1170
PS 1320 GOSUB1330:A ES%,EE%,CW
          %:GOTO1170
ED 1330 PRINT:IFCW%=0THENGOSUB
          680
DA 1340 A1=1:GOSUB790:ES%=HA%:
          LA=HA:A1=2:GOSUB790:EE
          %=HA%:RETURN
HB 1350 GOSUB830:CA=8192:LA=57
          343:A1=3:GOSUB840:CT%=
          HA%
QM 1360 C BA%,EA%,CT%:PRINT:GO
          SUB1220:RETURN
JA 1370 GOSUB830:CA=8192:A1=4:
          GOSUB840:CT%=HA%:T BA%
          ,EA%,CT%:PRINT:RETURN
HD 1380 IFEA>53247THENPRINT"
          {2 SPACES}-DATA SAVE N
          OT ALLOWED ABOVE $CFFF
          -":PRINT:GOSUB1170
XK 1390 RETURN
DQ 1400 TG=TG+1:TG%=128:IFTG>1
          THENTG=0:TG%=0
AR 1410 POKE157,TG%:GOSUB990:R
          ETURN
```

Hugh Rountree lives in Perry, Florida.

RAM-D

By Joseph Bolin

RAM-D is a RAM disk program for saving programs under ROM, I/O, and the block of memory at 49152 and recalling them at speeds 80 times faster than a 1541 disk drive. You can use a utility, store it in RAM-D, run another program, and then call back the first one almost instantaneously. There's no waiting for long disk saves and loads.

Just remember that a RAM disk is volatile; it's a temporary storage device. That means you'll lose the data or program should you turn off your computer without first saving it to disk.

RAM-D is written entirely in machine language for the 64. To enter it, use MLX, COMPUTE'S machine language entry program. See "Typing Aids" elsewhere in this section. When MLX asks for the starting and ending address, respond with the following values.

Starting address: 0801
Ending address: 0C88

When you have finished entering it, save a copy to disk before exiting.

Using a RAM Disk

To run RAM-D, load it and enter *SYS 2051, DEVICE, AUTOSAVE*. Device is the device number of the RAM disk. It can be any device number normally used for a disk drive. Using 1 for Autosave automatically stores in RAM-D any program as it is loaded off a disk. When you access the program for the second time, the program is removed from RAM-D. This keeps the last program that you've accessed from disk ready for reuse in RAM. Enter a 0 to disable this feature.

You can load and save to RAM disk with the normal format, but to scratch files, you must type *SAVE"S: FILENAME", DEVICE*. Filename is the name of the file to be scratched, and device is the device number of the RAM disk. To erase all the files on the RAM disk, type *SAVE"N:",DEVICE*.

To list the directory, type *LOAD"←",DEVICE*. This lists the directory to the screen and does not erase the program in memory. You can pause the listing by pressing any control key. This listing provides the number of bytes in each file, the filename, the saved address, and the number of bytes free. With no files in RAM-D, it will report 24K of space for storage.

You can also save a specified area of memory to the RAM disk by typing *SAVE"FILENAME",DEVICE,1,SA,EA*. SA is the starting address, and EA the ending address.

You can load a file into a specified area of memory from RAM-D by typing *LOAD"FILENAME",DEVICE,1,LA*. LA is the loading address. RAM-D saves the load and save vectors, so the program can be used with TurboDisk and TurboSave if you relocate and load them first.

If you want to enable or disable the automatic saving feature, type *POKE 3110,1* to enable or *POKE 3110,0* to disable. To change the device number without erasing the disk, then enter *POKE 3110,DEVICE*. To see the gain you get with the automatic saving feature, enable it and load a program off the disk twice.

RAM-D

```
0801:00 00 AD 30 03 8D 3F 0C A2
0809:AD 31 03 8D 40 0C AD 32 35
0811:03 8D 41 0C AD 33 03 8D BC
0819:42 0C A9 77 8D 32 03 A9 DE
0821:08 8D 33 03 A9 C6 8D 30 E2
0829:03 A9 84 85 2B A9 00 8D 9B
0831:83 0E 20 FD AE 20 9E B7 55
0839:8E 3E 0C 20 FD AE 20 9E 2D
0841:B7 8E 3D 0C A9 0E 85 2C F5
0849:A9 09 8D 31 03 20 59 08 88
0851:A9 00 20 42 A6 4C 7B E3 9F
0859:A9 84 8D 39 0C A9 0C 8D 51
0861:3A 0C A9 00 8D 3B 0C A9 E1
0869:A0 8D 3C 0C A9 00 8D 84 62
0871:0C 18 60 6C 41 0C A5 BA A0
0879:CD 3E 0C D0 F6 A0 00 B1 7A
0881:BB C9 53 D0 0A C8 B1 BB EB
0889:C9 3A D0 0E 4C 53 0A C9 95
0891:4E D0 07 C8 B1 BB C9 3A B4
```

```
0899:F0 BE A5 B9 F0 11 20 7B A9
08A1:0C 84 FB 85 FC 20 7B 0C 1C
08A9:84 FD 85 FE 4C C0 08 A5 37
08B1:2B 85 FB A5 2C 85 FC A5 A9
08B9:2D 85 FD A5 2E 85 FE 20 81
08C1:0F 0C E6 FD D0 02 E6 FE 74
08C9:A5 FD 38 E5 FB 85 03 A5 33
08D1:FE E5 FC 85 04 A5 A3 18 E8
08D9:65 03 48 A5 A4 65 04 B0 34
08E1:44 48 A4 B7 88 B1 BB 91 4A
08E9:05 88 10 F9 A4 B7 A9 00 97
08F1:91 05 C8 A5 A3 91 05 C8 B5
08F9:A5 A4 91 05 C8 C8 68 91 54
0901:05 88 68 91 05 C8 C8 A5 60
0909:FB 91 05 C8 A5 FC 91 05 F3
0911:C8 A9 00 91 05 98 A2 05 DF
0919:20 50 0C 78 A9 34 85 01 82
0921:A0 00 4C 39 09 4C 7E B9 D0
0929:B1 FB 91 A3 E6 FB D0 02 4A
0931:E6 FC E6 A3 D0 02 E6 A4 0E
0939:B1 FB 91 A3 A5 FB C5 FD 36
0941:D0 E6 A5 FC C5 FE D0 E0 A6
0949:A9 37 85 01 58 20 24 0C 56
0951:18 60 4C 04 F7 AD 3D 0C 4E
0959:F0 68 A6 BB A4 BC 20 97 7E
0961:0B 90 6F A5 BA C9 08 D0 43
0969:59 A9 00 35 90 A4 B7 D0 42
0971:03 4C 10 F7 A6 B9 20 AF A5
0979:F5 A9 60 85 B9 20 D5 F3 43
0981:A9 08 20 09 ED A5 B9 20 98
0989:C7 ED 20 13 EE 85 AE A5 C0
0991:90 4A 4A B0 BD 20 13 EE 56
0999:85 AF 8A D0 08 A5 C3 85 9C
09A1:AE A5 C4 85 AF A5 AE 85 5C
09A9:FB A5 AF 85 FC 20 F0 F4 B0
09B1:90 03 4C F9 E0 86 FD 84 97
09B9:FE 20 C0 08 A6 FD A4 FE 61
09C1:18 60 6C 3F 0C 85 93 48 5F
09C9:68 D0 F7 A5 BA CD 3E 0C 33
09D1:D0 83 20 0F 0C A5 B9 F0 7D
09D9:19 A0 00 B1 7A C9 2C D0 DF
09E1:0C 20 7B 0C 85 FE 84 FD 61
09E9:A0 01 4C FD 09 A0 00 4C 0D
09F1:FD 09 A0 01 A5 2B 85 FD 4C
09F9:A5 2C 85 FE 84 AA A0 00 9A
0A01:B1 BB C9 5F D0 03 4C 17 4E
0A09:0B A6 BB A4 BC 20 97 0B AE
0A11:90 03 4C CA 0B 78 A9 34 26
0A19:85 01 A0 00 B1 FB 91 FD E2
0A21:E6 FB D0 02 E6 FC A5 FB 54
0A29:C5 A8 D0 06 A5 FC C5 A9 1B
0A31:F0 09 E6 FD D0 02 E6 FE 18
0A39:4C 1D 0A A6 FD A4 FE A5 8C
0A41:AA F0 07 A9 37 85 01 58 8C
0A49:18 60 00 A6 2D A4 2E 4C 90
0A51:44 0A A9 01 85 AA C8 98 50
0A59:A4 BC 18 65 BB 90 01 C8 33
0A61:AA C6 B7 C6 B7 20 97 0B 58
0A69:90 03 4C CA 0B A5 A8 38 35
0A71:E5 FB 85 03 A5 A9 E5 FC F4
0A79:85 04 A5 A5 48 A5 A6 48 CE
0A81:C8 98 85 A7 A2 05 20 5A 0F
0A89:0C A4 A7 B1 A5 A0 00 91 1E
0A91:A5 A5 A5 C5 05 D0 06 A5 10
0A99:A6 C5 06 F0 0A A2 A5 A9 12
0AA1:01 20 50 0C 4C 8A 0A 68 12
0AA9:85 A6 68 85 A5 A0 00 B1 F0
0AB1:A5 F0 2C 20 08 0C B1 A5 D5
0AB9:38 E5 03 91 A5 C8 B1 A5 36
0AC1:E5 04 91 A5 C8 B1 A5 38 E6
0AC9:E5 03 91 A5 C8 B1 A5 E5 5C
0AD1:04 91 A5 C8 C8 C8 98 A2 CA
0AD9:A5 20 50 0C 4C AE 0A 78 3D
0AE1:A9 34 85 01 B1 A8 91 FB E7
0AE9:A5 A8 C5 A3 D0 06 A5 A9 81
0AF1:C5 A4 F0 0F E6 FB D0 02 EB
0AF9:E6 FC E6 A8 D0 02 E6 A9 2E
0B01:4C E5 0A A9 37 85 01 58 BC
0B09:A5 FB 85 A3 A5 FC 85 A4 AC
0B11:20 24 0C 4C 7B E3 A9 01 46
0B19:85 AA A9 84 85 A5 A9 0C 3C
0B21:85 A6 AD 8D 02 D0 FB A9 27
0B29:0D 20 D2 FF A0 00 B1 A5 36
0B31:F0 49 20 08 0C 20 DA 0B 38
0B39:88 84 A7 A5 A8 38 E5 FB F1
0B41:AA A5 A9 E5 FC 20 CD BD 6B
0B49:A9 20 20 D2 FF A9 22 20 78
0B51:D2 FF A6 A5 A4 A6 20 68 68
0B59:0C A9 22 20 D2 FF A9 20 30
0B61:20 D2 FF A4 A7 B1 A5 AA 80
0B69:C8 B1 A5 C8 84 A7 20 CD 62
0B71:BD A2 A5 A5 A7 20 50 0C 88
0B79:4C 23 0B A9 12 20 D2 FF 31
0B81:A5 A3 49 FF AA A5 A4 49 FA
0B89:FF 20 CD BD A2 43 A0 0C AC
0B91:20 68 0C 4C 7B E3 86 BB 4C
0B99:84 BC A9 84 85 A5 A9 0C C0
0BA1:85 A6 A0 00 B1 A5 F0 26 64
0BA9:B1 A5 F0 24 B1 BB C9 2A 9C
0BB1:F0 4C C9 3F F0 4E D1 A5 8A
0BB9:F0 4A 20 08 0C 98 18 69 BB
0BC1:06 A2 A5 20 50 0C 4C A3 29
0BC9:0B A2 04 4C 37 A4 38 60 70
0BD1:C4 B7 F0 04 88 4C BB 0B 8E
0BD9:C8 B1 A5 85 FB C8 B1 A5 D9
0BE1:85 FC C8 B1 A5 85 A8 C8 8B
0BE9:B1 A5 85 A9 18 C8 A6 AA 69
0BF1:D0 0A B1 A5 85 FD C8 B1 EA
0BF9:A5 85 FE 60 C8 60 20 08 3A
0C01:0C 4C DA 0B C8 D0 A1 C8 D3
0C09:B1 A5 D0 FB C8 60 AD 3B 9B
0C11:0C 85 A3 AD 3C 0C 85 A4 A1
0C19:AD 39 0C 85 05 AD 3A 0C 8F
0C21:85 06 60 A5 A3 8D 3B 0C B9
0C29:A5 A4 8D 3C 0C A5 05 8D 41
0C31:39 0C A5 06 8D 3A 0C 60 CB
0C39:00 00 00 00 00 00 00 00 51
0C41:00 00 20 42 59 54 45 53 7B
0C49:20 46 52 45 45 2E 00 18 9C
0C51:75 00 90 02 F6 01 95 00 3D
0C59:60 85 02 38 B5 00 E5 02 42
0C61:B0 02 D6 01 95 00 60 8E 39
0C69:71 0C 8C 72 0C A0 00 B9 92
0C71:FF FF F0 F2 20 D2 FF C8 EB
0C79:D0 F5 20 FD AE 20 9E AD 3C
0C81:4C F7 B7 00 00 00 00 00 B4
```

Joseph Bolin lives in Rockwell, Iowa.□

Send new product
announcements
and/or press releases
on your Commodore 64/128
products to
Tom Netsel c/o COMPUTE.

TYPING AIDS

MLX, our machine language entry program for the 64 and 128, and The Automatic Proofreader are utilities that help you type in Gazette programs without making mistakes. To make room for more programs, we no longer include these labor-saving utilities in every issue, but they can be found on each Gazette Disk and are printed in all issues of Gazette through June 1990.

If you don't have access to a back issue or to one of our disks, write to us, and we'll send you free printed copies of both of these handy programs for you to type in. We'll also include instructions on how to type in Gazette programs. Please enclose a self-addressed, stamped envelope. Send a self-addressed disk mailer with postage to receive these programs on disk.

Write to Typing Aids, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

ONLY ON DISK

Here's a special program that you'll find only on Gazette Disk.

Unbreakable Cipher
By James T. Jones
Klondike, TX

There's no reason to leave your love letters lying around for prying eyes to read. You may have some financial or business data that you'd like to send to an associate and know that it won't be read by the wrong people. Use Unbreakable Cipher to protect your secret correspondence.

You can have this program, our PD picks, and all the other programs in this issue by ordering the November Gazette Disk. The U.S. price is $9.95 plus $2.00 shipping and handling. Send your order to Gazette Disk, COMPUTE Publications, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

HOW TO TYPE IN GAZETTE PROGRAMS

Each month, Gazette publishes programs for the Commodore 128 and 64. Each program is clearly marked as being written for the 128, 64, or both. Be sure to type in the correct version for your machine. All 64 programs run on the 128 in 64 mode. Be sure to read the instructions in the corresponding article. This can save time and eliminate any questions which might arise after you begin typing.

At irregular intervals, we publish two programs designed to make typing in our programs easier: The Automatic Proofreader, for BASIC programs, and a 128 and 64 version of MLX, for entering machine language programs. In order to make more room for programs, we do not print these handy utilities in every issue of the magazine. Copies of these programs are available on every Gazette Disk. If you don't have access to a disk, write us, and we'll send you free copies of both of these programs. Please enclose a stamped, self-addressed envelope. Write to Typing Aids, COMPUTE's Gazette, 324 West Wendover Avenue, Suite 200, Greensboro, North Carolina 27408.

When entering a BASIC program, be especially careful with DATA statements, as they are extremely sensitive to errors. A mistyped number in a DATA statement can cause your machine to "lock up" (you'll have no control over the computer). If this happens, the only recourse is to turn your computer off and then on, erasing what was in memory. This could cause you to lose valuable data, so be sure to *save a program before you run it.* If your computer crashes, you can always reload the program and look for the error.

Special Characters

Most of the programs listed in each issue contain special control characters. To facilitate typing in any programs from Gazette, use the following listing conventions.

The most common type of control characters in our listings appear as words within braces: {DOWN} means to press the cursor-down key; {5 SPACES} means to press the space bar five times. {RVS} means to enter Reverse mode by simultaneously pressing the Ctrl key and the 9 key.

To indicate that a key should be shifted (hold down the Shift key while pressing another key), the character is underlined. For example, A means hold down the Shift key and press A. You may see strange characters on your screen, but that's to be expected. If you find a number followed by an underlined key enclosed in braces (for example, {8 A}), type the key as many times as indicated (in our example, enter eight shifted A's).

If a key is enclosed in special brackets, [<>], hold down the Commodore key (at the lower left corner of the keyboard) and at the same time press the indicated character.

Rarely, you'll see a single letter of the alphabet enclosed in braces. This can be entered on the Commodore 64 by pressing the Ctrl key while typing the letter in braces. For example, {A} means to press Ctrl-A.

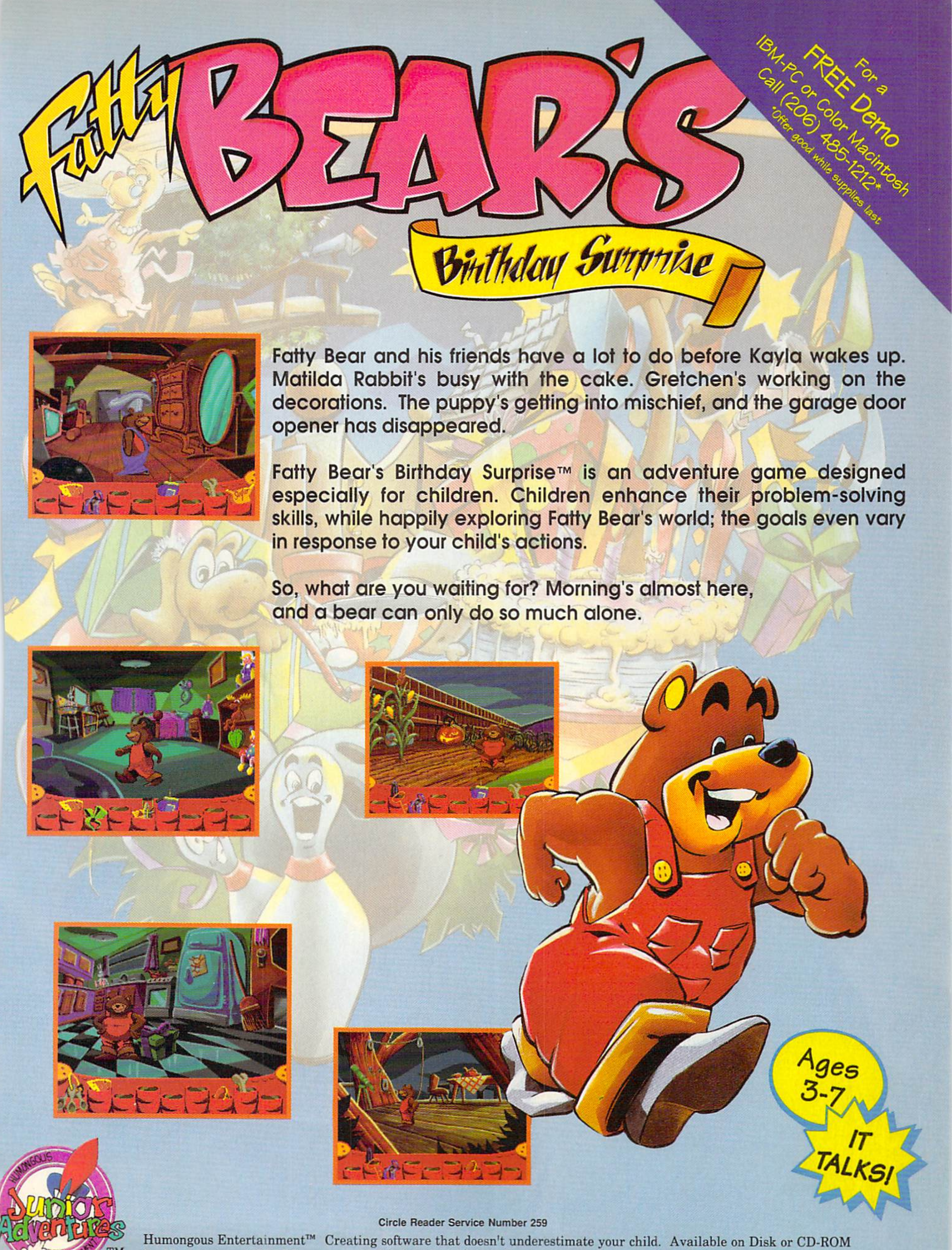
The Quote Mode

You can move the cursor around the screen with the Crsr keys, but you may want to move it under program control, as in examples like {LEFT} and {HOME} in the listings. The only way the computer can tell the difference between direct and programmed cursor control is the quote mode.

Once you press the quote key, you're in quote mode. It can be confusing when you are in this mode if you mistype a character and cursor left to change it. You'll see a graphics symbol for cursor left. Use the delete key to back up and edit the line from the beginning. Type another quotation mark to get out of quote mode.

If things get too confusing, exit quote mode by pressing Return; then cursor up to the mistyped line and fix it. If the mistake involves cursor movement, however, you must press the quote key to reenter quote mode. ❐

When You Read:	Press:	See:
{CLR}	SHIFT CLR/HOME	♥
{HOME}	CLR/HOME	S
{UP}	SHIFT ↑ CRSR ↓	●
{DOWN}	↑ CRSR ↓	Q
{LEFT}	SHIFT ←CRSR→	▌
{RIGHT}	←CRSR→	]
{RVS}	CTRL 9	R
{OFF}	CTRL 0	▁
{BLK}	CTRL 1	■
{WHT}	CTRL 2	E
{RED}	CTRL 3	£
{CYN}	CTRL 4	◥
{PUR}	CTRL 5	▒
{GRN}	CTRL 6	↑
{BLU}	CTRL 7	←
{YEL}	CTRL 8	π
{ F1 }	f1	▔
{ F2 }	SHIFT f1	╮
{ F3 }	f3	▁
{ F4 }	SHIFT f3	╰
{ F5 }	f5	▏
{ F6 }	SHIFT f5	╯
{ F7 }	f7	▕
{ F8 }	SHIFT f7	▒
←	←	▒
↑	SHIFT ↑	π
For Commodore 64 Only		
⁅ 1 ⁆	COMMODORE 1	♣
⁅ 2 ⁆	COMMODORE 2	╭
⁅ 3 ⁆	COMMODORE 3	⊠
⁅ 4 ⁆	COMMODORE 4	▣
⁅ 5 ⁆	COMMODORE 5	⊤
⁅ 6 ⁆	COMMODORE 6	▐
⁅ 7 ⁆	COMMODORE 7	○
⁅ 8 ⁆	COMMODORE 8	▚



Fatty BEAR'S

Birthday Surprise

For a
FREE Demo
IBM-PC or Color Macintosh
Call (206) 485-1212*
*Offer good while supplies last

Fatty Bear and his friends have a lot to do before Kayla wakes up. Matilda Rabbit's busy with the cake. Gretchen's working on the decorations. The puppy's getting into mischief, and the garage door opener has disappeared.

Fatty Bear's Birthday Surprise™ is an adventure game designed especially for children. Children enhance their problem-solving skills, while happily exploring Fatty Bear's world; the goals even vary in response to your child's actions.

So, what are you waiting for? Morning's almost here, and a bear can only do so much alone.

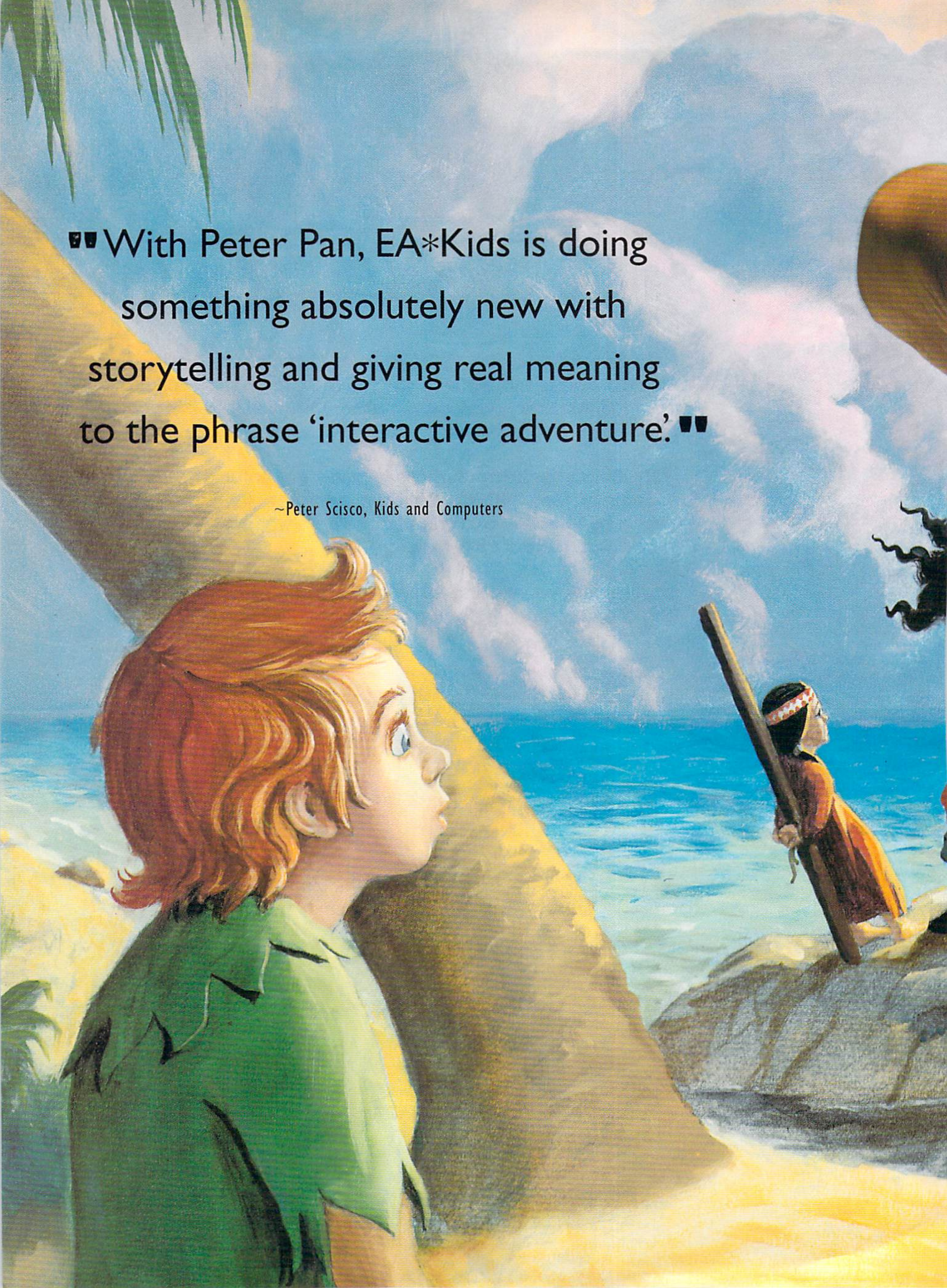
Ages 3-7

IT TALKS!

Humongous Junior Adventures Entertainment™

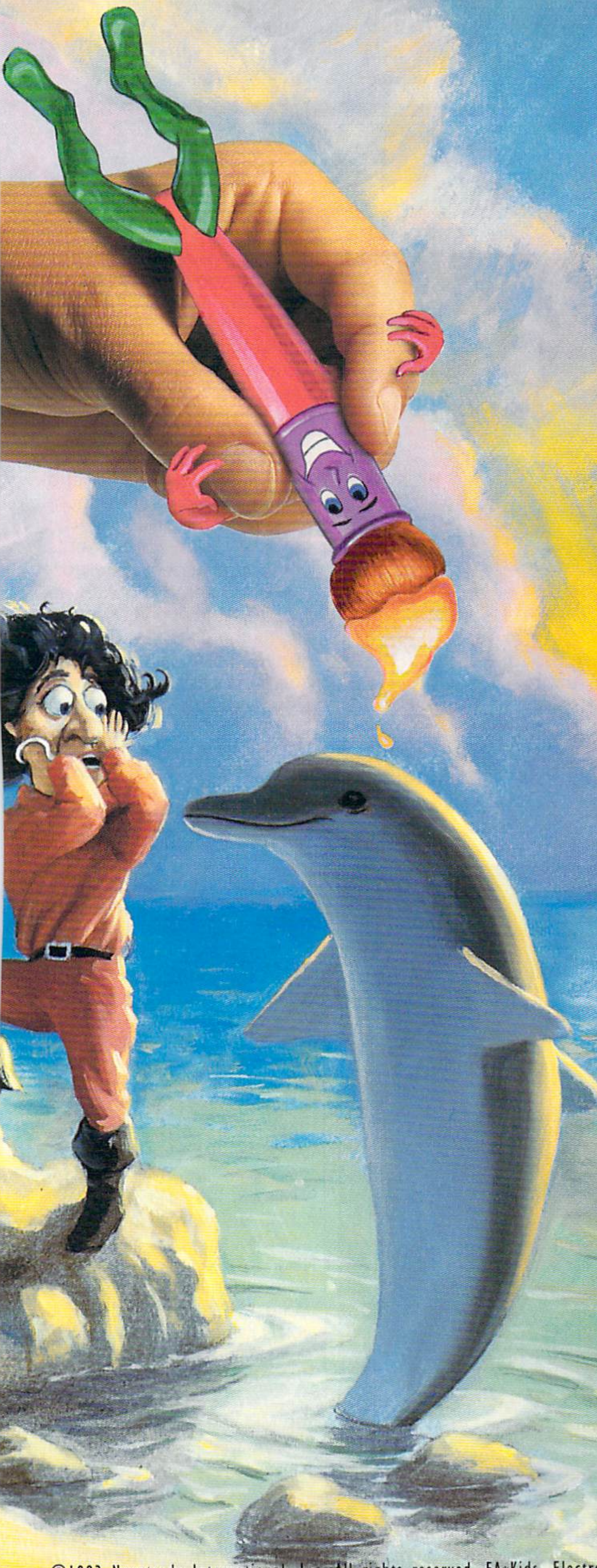
Circle Reader Service Number 259

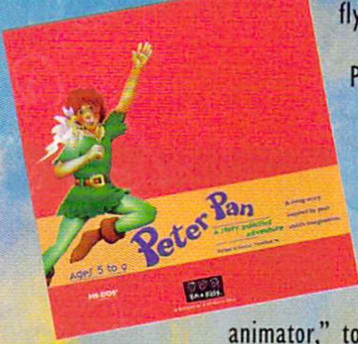
Humongous Entertainment™ Creating software that doesn't underestimate your child. Available on Disk or CD-ROM for Macintosh and IBM PC systems. SRP $49.95 Disk/ $54.95 CD-ROM. To purchase, visit your favorite software retailer or order direct from Humongous Entertainment, 13110 NE 177th Pl. Box 180, Woodinville, Wa. 98072. (206) 485-1212.



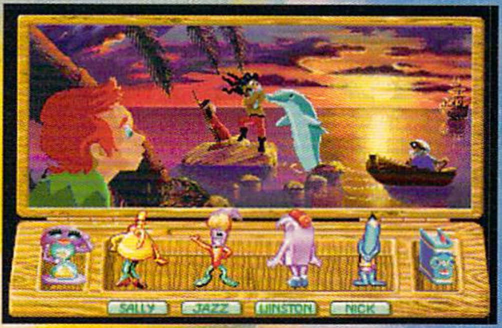
"With Peter Pan, EA*Kids is doing something absolutely new with storytelling and giving real meaning to the phrase 'interactive adventure'."

~Peter Scisco, Kids and Computers





Remember the sense of wonder you felt as you watched Peter Pan discover he could really fly? Well, in Peter Pan, A Story Painting™ Adventure from EA*Kids,™ it's your child's imagination that really soars. Boys and girls ages 5-9 become the "hands of the animator," to help Peter save Wendy from the evil Captain Hook. Along with the Paintbox Pals,™ children actually change events in the story, expanding their reading, problem-solving and decision-making skills like never before.



(Actual computer screen shot)

It's the kind of fun your children will return to again and again. Unless of course, you're playing it yourself.

To order a FREE EA*Kids demo disk or videotape call 1 800 KID-XPRT.

For IBM® compatibles, Macintosh® and 3DO.® Available on floppy disk and CD-ROM.

EA*Kids™
THE KIDS SOFTWARE EXPERTS

Circle Reader Service Number 165

©1993 Novotrade International, Inc. All rights reserved. EA*Kids, Electronic Arts, Story Painting and Paintbox Pals are trademarks of Electronic Arts. IBM, Macintosh and 3DO are registered trademarks of International Business Machines Corp., Apple Computer, Inc. and The 3DO Company respectively.

ALR EVOLUTION IV MPC

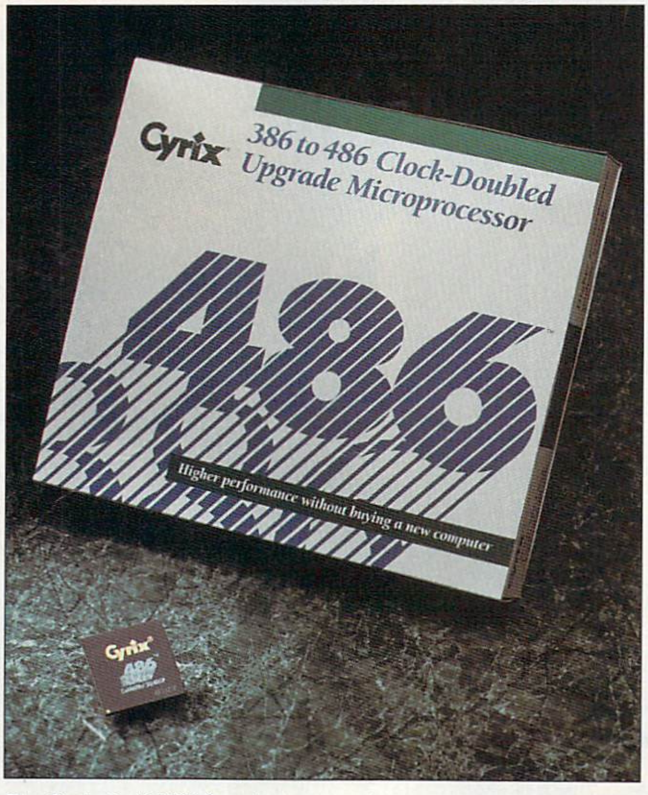
ALR's Evolution IV MPC boasts good looks, power, and an attractive price. However, it's the system's expandability, quality, and great software bundle that make it a standout in the crowded MPC market.

Let's start with the basics. The standard Evolution IV MPC package comes with an Intel 486DX/33, 4MB of RAM, and six drive bays (three accessible from the front). The system sports six 16-bit ISA-bus slots, two of which can be used with VL-Bus extensions and one of which can be used with ALR's proprietary local-bus extension. The ZIF socket lets you upgrade the CPU with one of Intel's OverDrive chips (including the 32- or 64-bit P24T version of the Pentium), and you can upgrade memory all the way to 52MB on the motherboard.

My review system was fully decked out with a 240MB Western Digital Caviar drive, a VL-Bus ATI Mach 32 video adapter, 8MB of RAM, and the optional 256K cache, which provides zippy performance even in demanding multimedia applications. It also came with a 3½-inch floppy drive, a Sony CDU 31-A2 CD-ROM drive (the system now ships with a Texel DM-3024 dual-speed drive), a Media Vision Pro AudioSpectrum 16 sound card, and a Labtec microphone. ALR routes the audio board's sound through the PC's speaker (which is very good, as PC speakers go), and you can hook up your own external speakers. I found the system's case solid and accessible.

A standout feature is the TriCombo card, which occupies the proprietary local-bus slot and provides ATI local-bus video, a 256K processor cache, and an Ethernet networking adapter.

ALR's Evolution IV packs great multimedia performance into an attractive package with an attractive price.

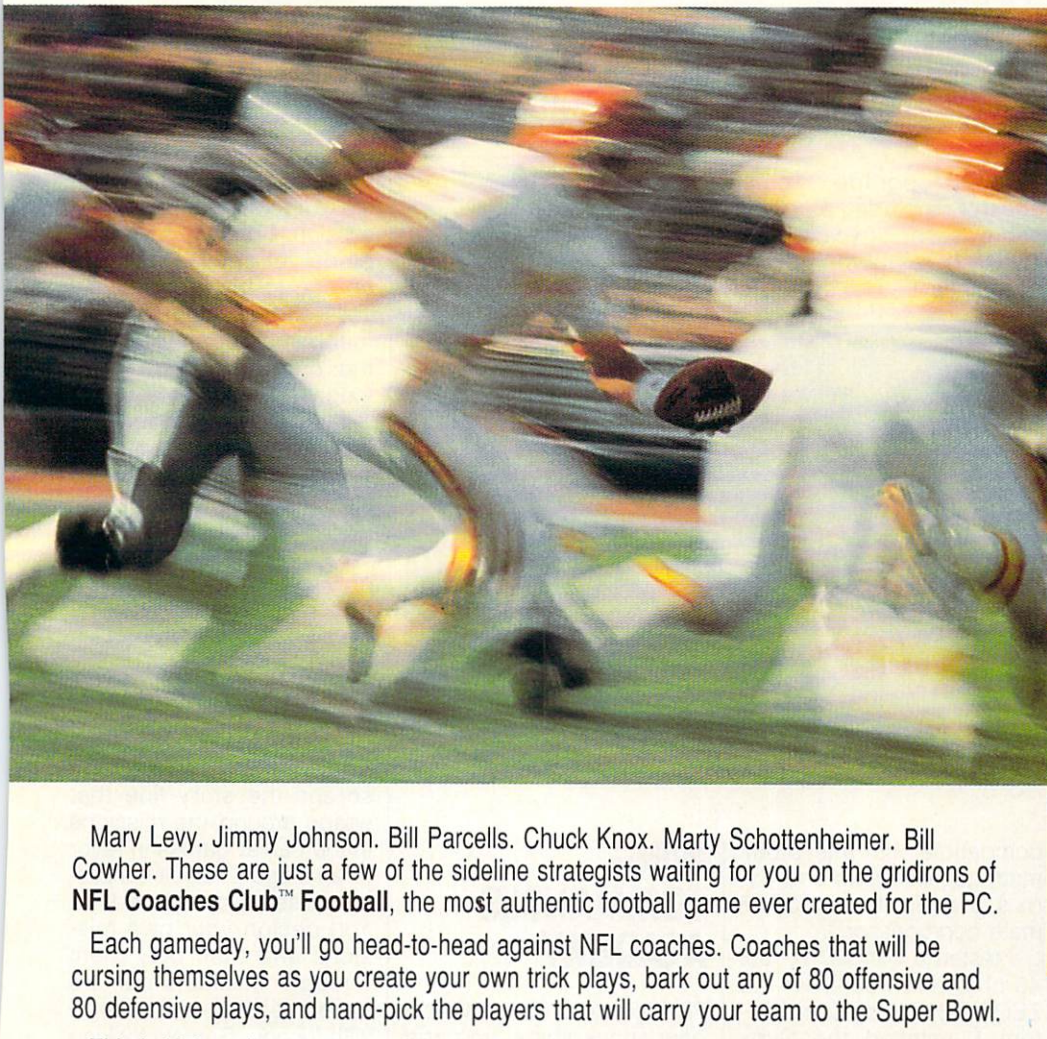

Cyrix
386 to 486 Clock-Doubled Upgrade Microprocessor
486
Higher performance without buying a new computer
Cyrix
486

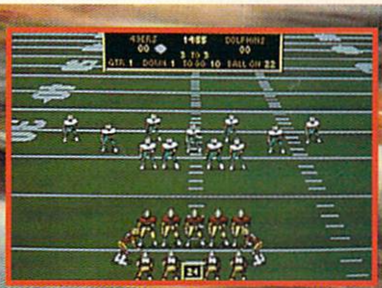
The Cyrix Cx486DRx^2 replacement microprocessor brings 486 performance and compatibility to your current 386DX system.

While a number of manufacturers—even some of the big names—have had trouble with quality control in the form of faulty motherboards, short-lived hard drives, and similar problems, I encountered no such difficulties with this MPC. The components come from respected, reliable manufacturers, and ALR offers a limited five-year (chassis, motherboard, and power supply)/15-month (labor costs and peripherals) warranty with optional on-site service and available extended-warranty options. While there was a longer-than-usual delay in switching from graphics to text mode on the bundled ALR 14-inch noninterlaced SVGA monitor, that's only a very minor quibble; generally, I found it sharp, stable, and easy to look at. I liked the feel and action of the keyboard, and the two-button mouse worked fine.

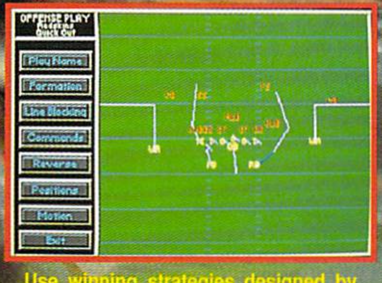
Preinstalled on the system are MS-DOS 6, Windows 3.1, WinCIM (for access to CompuServe, if you opt for a modem), and several CD-ROM titles, including Cinemania, Works for Windows, Multimedia Beethoven, Bookshelf for Windows, Kodak Photo CD ACCESS software, and Microsoft's Multimedia Pack 1.0. If you opt for a fax/data modem, you'll also receive Eclipse Fax for Windows. If you'd rather avoid the hassle of installing a number of hardware and software items on your new system, this may be the MPC for you. I thoroughly enjoyed this system and found it ready for the most demanding applications. ALR offers a multitude of system options; contact the company for a system configured to

Beat The NFL Coaches At Their Own Game.

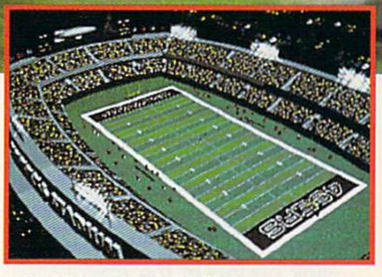



49ERS 1455 DOLPHINS
00 00
QTR 1 DOWN 1 TO GO 10 BALL ON 22

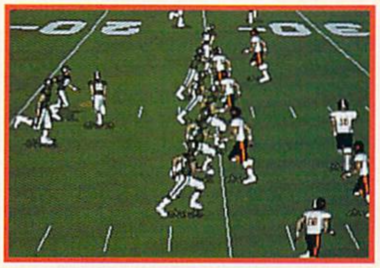
Blitz, sack, kick and pass your way to the playoffs through in-your-facemask graphics!



Use winning strategies designed by actual NFL coaches and players.



Create your own NFL team dynasty and head to the Super Bowl.



Choose players based on skills, size, and speed.

Marv Levy. Jimmy Johnson. Bill Parcells. Chuck Knox. Marty Schottenheimer. Bill Cowher. These are just a few of the sideline strategists waiting for you on the gridirons of **NFL Coaches Club™ Football**, the most authentic football game ever created for the PC.

Each gameday, you'll go head-to-head against NFL coaches. Coaches that will be cursing themselves as you create your own trick plays, bark out any of 80 offensive and 80 defensive plays, and hand-pick the players that will carry your team to the Super Bowl.

This is NFL action so real you'll be scraping the mud from your face. You'll plow through the trenches. Shake off bone-crunching tackles. Perform acrobatic catches. And choose players based on true-to-life characteristics like blocking and coverage skills, height, weight, and speed.

No other football game brings more to the playing field. Full 3-D field display lets you view the action from every conceivable angle. Detailed instant replay function lets you quickly analyze plays. And individual plays or entire games can be saved so you can view your greatness (or learn from your mistakes!).

NFL Coaches Club™ Football from MicroProse. Your chance to learn from the best. Then beat them at their own game.

MICRO PROSE®
ENTERTAINMENT • SOFTWARE
SERIOUSLY FUN SOFTWARE

© 1993 MicroProse Software, Inc. ALL RIGHTS RESERVED.
NFL Coaches Club is a trademark of the National Football League and is licensed exclusively by Leader Enterprises, Inc., Orlando, FL.

Circle Reader Service Number 133

To get our free catalog, call **1-800-879-PLAY** Mon.-Fri., 8:30 am-5:00 pm EST or fill out the coupon and mail it to: MicroProse Software, Inc.
180 Lakefront Drive • Dept. D10 • Hunt Valley, MD 21030-2245

Name: ____________________

Address: ____________________

City: ____________ State: ______ Zip: ______

GAO

meet your specific needs.

MIKE HUDNALL

ALR
(800) 444-4ALR
(714) 581-6770
$3,047—base ISA system with 33-MHz 486DX and 240MB drive
$149—256K cache
$270—extra 4MB of RAM
$79—ALR 96/48/24 fax/data modem

Circle Reader Service Number 434

CYRIX CX486DRX^2

It's no fun owning a 386 anymore. With today's more powerful software, 386 machines feel slow. You could sell your 386 and buy a new 486, or you could buy a new 486 motherboard and swap out your old one. But there's a third solution that's much less complicated.

Cyrix has a single-chip upgrade that can bring 486-level performance to your 16-MHz, 20-MHz, or 25-MHz 386DX system. All you do is pull out your old CPU (a chip puller is included), put the new Cx486DRx^2 chip in its place, install the heat sink on top of the chip (20-MHz and 25-MHz upgrades only), and install the cache software (which simply turns on the processor's cache; it doesn't take up any memory).

The new chip speeds up your computer in three ways. First, it acts as a clock doubler, so your 16-MHz machine will run at 32 MHz, your 20-MHz machine will run at 40 MHz, or your 25-MHz machine will run at 50 MHz. Second, the chip includes a built-in 1K cache, which isn't found on 386 chips. (A true 486 has a built-in 8K cache, which gives it a greater advantage in this area.) Finally, the Cx486DRx^2 has an instruction set that's compatible with Intel's 486 instruction set. According to Cyrix, all DOS, Windows, and OS/2 software will work with its upgrade chip.

The upgrade chip doesn't include a math coprocessor (which the 486DX has, but the 486SX doesn't have). However, it is compatible with Intel's 387 math coprocessors and Cyrix's own FasMath 83D87 math coprocessor.

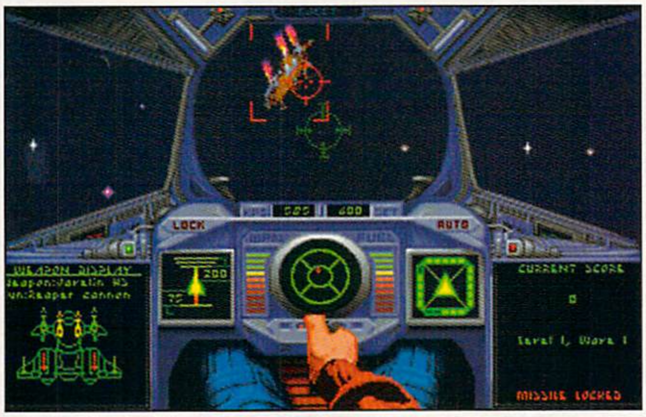
I tested a Cx486DRx^2 20/40 chip on a four-year-old ZEOS 386DX system. Before I installed the Cyrix chip, Norton Utilities showed an Intel 20-MHz 386DX with a speed of 8.9. After the installation, Norton showed a Cyrix 40-MHz 486 with a speed of 47.9. With the 386DX, WindSock reported speeds of CPU: 85, Video: 37, Disk: 82, Memory: 35, and Overall: 70. With the 486DRx^2, WindSock reported CPU: 268, Video: 86, Disk: 113, Memory: 35, and Overall: 160.

As you can see from the WindSock numbers, a faster processor can even accelerate your system's video and hard drive performance. Short of buying a new motherboard or a new computer, getting the Cyrix 486 upgrade chip is the best way to speed things up.

DAVID ENGLISH

Cyrix
(214) 994-8388
$299—Cx486DRx^2 16/32
$349—Cx486DRx^2 20/40
$399—Cx486DRx^2 25/50

Circle Reader Service Number 435



Wing Commander Academy lets you create your own custom missions against cunning, feline Kilrathi opponents.

WING COMMANDER ACADEMY

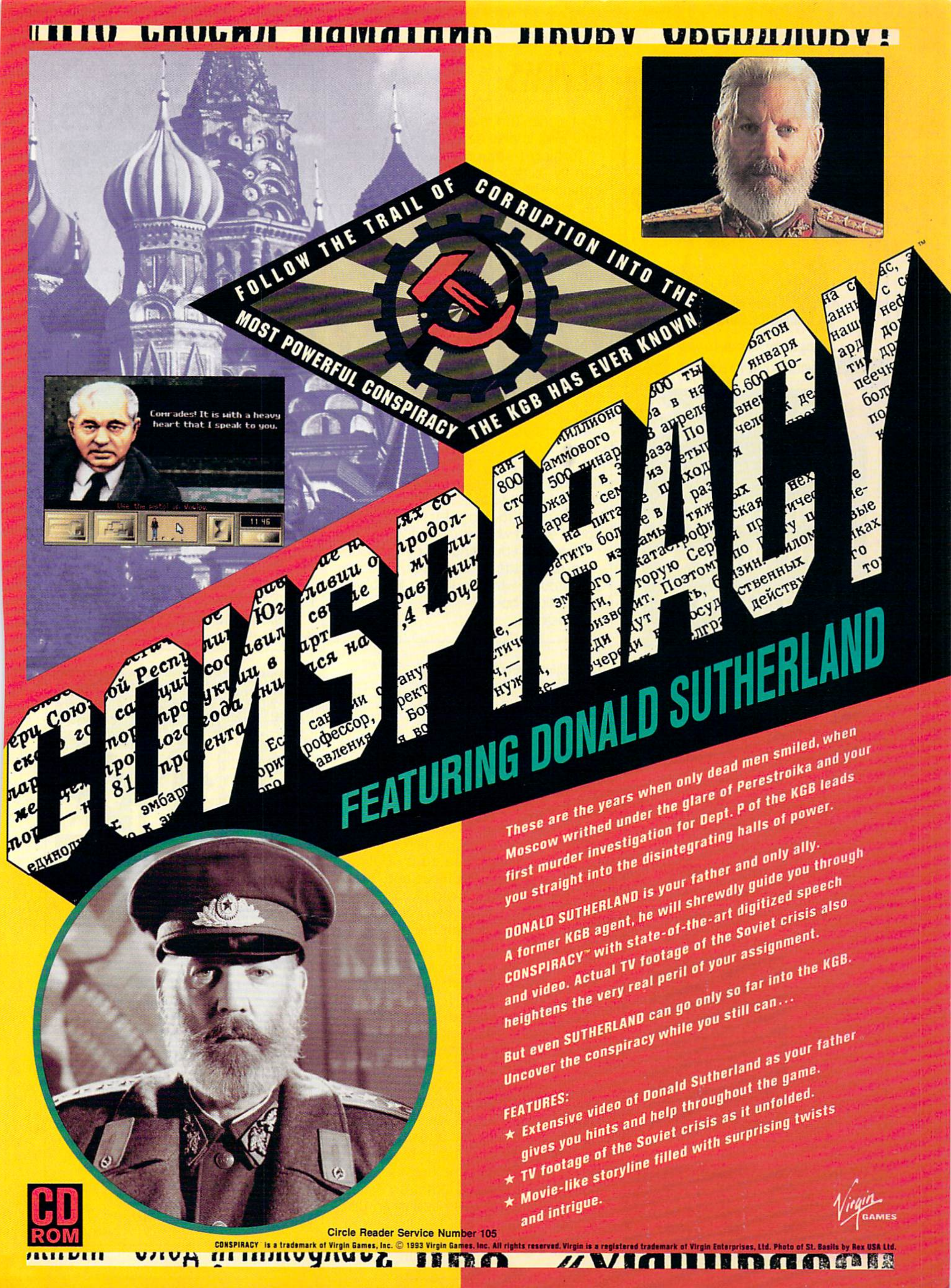
Piloting two ponderous Crossbow attack ships, you and your wingman drop out of autopilot at Nav Point 4. As you survey the starscape, a strange sense of déjà vu overcomes you. Two Ralatha capital ships, your primary targets, hang motionless in the distance. Between you and your targets swarm a mess of Kilrathi fighters, like angry bees protecting their queen. You give Hobbes the order over the communication circuit to break and attack, then pull the ship hard to the right and do the same . . .

That sense of déjà vu could be caused by a number of things. Perhaps you spent many hours playing one of the first two Wing Commander games, and you've encountered the feline Kilrathi before. Or maybe it's just the tenth time in an hour that you've tried to make it through this specific mission. Cursing as you explode yet again, you have no one to blame but yourself—after all, in Wing Commander Academy, you're the one who made it so tough.

In Academy, you aren't flying in the persona of "old blue brow," the familiar hero from the preceding games. Instead, you're a cadet at the Confederation Academy. Rather than facing actual combat, you experience missions courtesy of a holodeck-style simulator. Designing these missions is up to you.

Academy uses the Wing Commander II engine and scraps the story line that wraps around the missions in the earlier games in favor of an elegant, albeit simplistic, mission design editor. You design your own missions and then play them through. Missions can be saved to disk and shared with friends. Gamers looking for cinematic drama won't find it in Academy; Wing Commander fans, however, will find combat scenarios limited only by their imagination and skill.

In Design mode, you place enemy craft and obstacles at each navigation point as you see fit. There are 16 ship types to choose from, including two new designs. Adding variety and challenge are asteroids and minefields, retrievable data pods and ejected pilots, and a space station to defend. You can choose wing men—simulated versions of the sidekicks from the first two games—or choose to



FOLLOW THE TRAIL OF CORRUPTION INTO THE MOST POWERFUL CONSPIRACY THE KGB HAS EVER KNOWN

Comrades! It is with a heavy heart that I speak to you.

Use the pistol on Voglov.

11:46

CONSPIRACY™

FEATURING DONALD SUTHERLAND

These are the years when only dead men smiled, when Moscow writhed under the glare of Perestroika and your first murder investigation for Dept. P of the KGB leads you straight into the disintegrating halls of power.

DONALD SUTHERLAND is your father and only ally. A former KGB agent, he will shrewdly guide you through **CONSPIRACY**™ with state-of-the-art digitized speech and video. Actual TV footage of the Soviet crisis also heightens the very real peril of your assignment.

But even **SUTHERLAND** can go only so far into the KGB. Uncover the conspiracy while you still can...

FEATURES:

★ Extensive video of Donald Sutherland as your father gives you hints and help throughout the game.

★ TV footage of the Soviet crisis as it unfolded.

★ Movie-like storyline filled with surprising twists and intrigue.

CD ROM

Virgin GAMES

Circle Reader Service Number 105

CONSPIRACY™ is a trademark of Virgin Games, Inc. © 1993 Virgin Games, Inc. All rights reserved. Virgin is a registered trademark of Virgin Enterprises, Ltd. Photo of St. Basils by Rex USA Ltd.

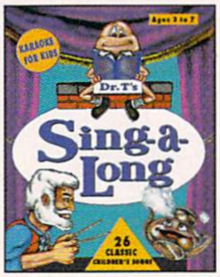
On CD-Rom or disc!
Sing along with us to your favorite children's songs!

Dr. T's SING-A-LONG™

26 Classic Children's Songs

Sing Along With Music & Animations

Music, animations, song lyrics, and musical notation combine to make singing along a real treat for children and parents. *Dr. T's Sing-A-Long* introduces your child to the wonders of music! Each song has its own unique characters, animated story and sound effects. Notes and lyrics scroll in time with the music. Older children re-enforce reading skills and learn to read music. Younger children love to sing and watch the animations.



Dr. T's Software
For information, call 1-800-989-6434.

Circle Reader Service Number 136

go it alone. The relative skill of each enemy pilot is also selectable.

Turning tradition on its head, you can fly missions as a Kilrathi pilot up against Confederation fighters. If you just want to dive in and start shooting, the Wave mode skips the mission design altogether. You face progressively tougher ships in progressively larger numbers and shoot for the highest score.

Taking the story *out* of a game is a bold move by Origin and a concept that would be anathema to many of today's top designers. Narrative framework almost always helps to bridge the emotional distance between player and game. Yet Academy succeeds because designing the missions puts some of "you" into the game. An added benefit is that jettisoning story animation lets Academy fit in just under 5MB of hard drive space.

If you're looking for some outer space action while you await Wing Commander III, you'll find that Wing Commander Academy is a great, all-action playground where you can keep your battle skills honed.

DAVID GERDING

Origin
Distributed by Electronic Arts
(512) 335-5200
$49.95

Circle Reader Service Number 436

SYNDICATE

The recent trend in science fiction has been to paint the near future as a dark, dirty dystopia. Electronic Arts' science-fiction strategy game, Syndicate, is no exception. Created by Bullfrog, which brought us Populous and Power-Monger, Syndicate is a dark, bloody, Ridley Scott–esque strategy game set in 2096. You take on the role of a pseudogodfather, riding herd on a crime syndicate looking to cash in on a world made ripe for plundering by megacorporations.

The task is simple: You must conquer the globe through a series of covert assassination, bloodbath, and persuasion missions. The tools of your trade are genetically augmented cyborgs, outfitted with a neural control device which allows you to alter the brain chemistry of the agents, boosting their intelligence, perception, and adrenaline levels. While the agents battle it out on the streets of tomorrow's cities, you hover safely overhead in an ultramodern airship.

You conquer each territory by com-

COMPUTE LIBRARY CASES

COMPUTE
COMPUTE

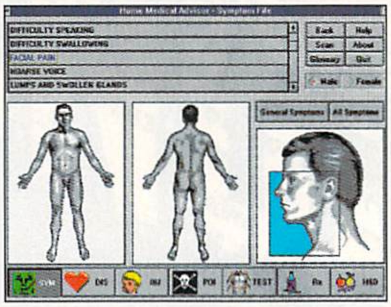
Store your issues of COMPUTE in our new Custom Bound Library Cases made of blue simulated leather embossed with a white COMPUTE logo on the spine. It's built to last, and it will keep 12 issues in mint condition indefinitely. Each case has a gold transfer for recording the date. Send your check or money order ($8.95 each, 3 for $24.95, 6 for $45.95) postpaid USA orders only. Foreign orders add $1.50 additional for postage and handling per case.

TO: COMPUTE Magazine
Jesse Jones Industries
499 E. Erie Ave., Phila., PA 19134

CREDIT CARD HOLDERS
(orders over $15)
CALL TOLL FREE: 1-800-825-6690.

Or mail your order, clearly showing your account number and signature. PA. residents add 7% sales tax.

SATISFACTION GUARANTEED



The Windows version of Dr. Schueler's Home Medical Advisor may be the closest thing to a modern house call.

OOPS!

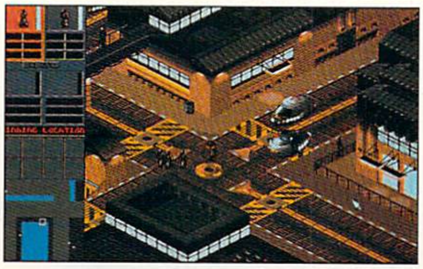
In our August 1993 issue, we ran a review of the Windows version of Doctor Schueler's Home Medical Advisor, but we showed a screen shot from the DOS version. Here's the Windows screen shot that should have appeared with the review.

Doctor Schueler's Home Medical Advisor, Windows Version

Pixel Perfect
(800) 788-2099
(407) 779-0310
$87.50

Circle Reader Service Number 437

pleting a specific mission plan, and as your sphere of influence grows, so does your revenue from taxes. Revenue is important, because the only way to succeed in the series of increasingly difficult missions is to have stronger and faster agents armed with more and better firepower. The cyborg agents can be updated in any number of ways, from cybernetic limbs to enhanced computerized brains. Weapons range from simple automatic pistols to high-powered laser rifles and beyond. To have access to these toys, though, you must research the technology, and as any good technohead knows, research costs serious money.



Syndicate's futuristic cities are full of numerous deadly challenges.

Once the agents have been outfitted with the tools of the trade necessary for the mission, they're delivered to the scene of the mission, and you assume control. The play screen is divided into three main windows. The first gives control of the agents, either singly or as a group. You can alter the agents' chemical levels and may even choose to induce a state of controlled panic, pumping all drug levels to maximum. When pumped up, the cyborgs really fly, but when the drug wears off, they slow down considerably. The second window is an overhead sensor display which shows the direction of the object or person that is your mission objective and indicates the location of civilians, police, and rival cyborgs. The main window shows a skewed 3-D overhead view of the city, rendered in crisp, brooding Super VGA. The attention to details—such as working levitation cars, magnetic-levitation trains, and neon billboards—is impressive, but the cities are just a touch too clean and sharp-edged for such a bleak future.

You control the movement of the agents, as well as which weapons they shoulder and whom they fire upon. Often missions become bloodbaths, with rival agents and police officers descending from all corners. The AI is decent, although not brilliant. I do like the way the civilians run away when you level your sights on them.

Syndicate is a lot of fun. The game

Most People Can't See a Single Reason to Try Something Besides SimCity®

We See 2000.

Coming this Christmas.

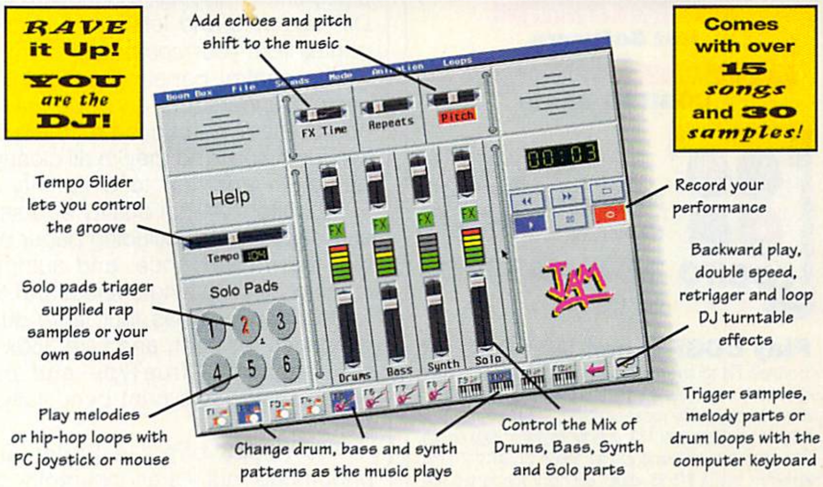
MAXIS

Circle Reader Service Number 158

The TECHNO, RAP and Hip-Hop Improvisation Program for IBM and Amiga

RAVE it Up! YOU are the DJ!

Comes with over 15 songs and 30 samples!


Add echoes and pitch shift to the music
Tempo Slider lets you control the groove
Solo pads trigger supplied rap samples or your own sounds!
Play melodies or hip-hop loops with PC joystick or mouse
Change drum, bass and synth patterns as the music plays
Control the Mix of Drums, Bass, Synth and Solo parts
Record your performance
Backward play, double speed, retrigger and loop DJ turntable effects
Trigger samples, melody parts or drum loops with the computer keyboard
Boom Box
File
Sounds
Mode
Animation
Loops
FX Time
Repeats
Pitch
00:03
Help
Tempo
Solo Pads
Drums
Bass
Synth
Solo
JAM

BOOM BOX

Dr.T's Music Software 124 Crescent Road, Needham, MA 02194 1-800-989-6434 (617) 455-1454

Circle Reader Service Number 192

The World's Toughest Game Contest!

Dare To Take The COGITO Challenge

And WIN an ULTIMATE MAC or PC SYSTEM

or thousands of other prizes!

Akin to the nefarious Rubik's Cube, but with **over 120 levels**, you must restore order from chaos in this **challenging** strategy game.

Two Grand Prizes
MAC or PC Ultimate Computer System

30 Runner-up Prizes
Hot Software

1,000's of Honorable Mentions
COGITO T-Shirts

"Best Mac Game of the Year" - Apple France
"Best Windows Game Nominee" - WindowsUser Magazine

See your local retailer, or call 1-800-453-7671 Ext. 120

Play COGITO and Win Prizes!
It's simple. Fill out an entry form, included in all COGITO packages, return it with your dated sales receipt (price circled) and a 25-word essay on why you enjoy playing COGITO. As a *special bonus*, if you reach level 120, write the password code on your entry form, and we'll send you an "I Beat COGITO" T-Shirt, absolutely free (a $15.95 value). But hurry, the contest runs from June 1 to December 31, 1993. Void where prohibited.

INLINE SOFTWARE
308 Main Street, Lakeville, CT 06039
203-435-4995, Fax: 203-435-1091

COGITO is a registered trademark of Atreid Concepts, S.A.
Available for Macintosh and Windows.

Circle Reader Service Number 155

is easy to learn, but the missions are challenging enough to keep the interest level high. While scenarios are centered on offensive firepower, you've got to develop a unique defensive strategy for each mission. You may, for instance, need to split your agents, hiding one behind a corner to rush in and flank the enemies. As you battle, weapons run dry pretty quickly, but you can always use the rather nasty tactic of cop hunting. One shot will take a policeman out, and your agent can then retrieve a fully loaded shotgun to pursue more important targets. This isn't a game to use as a morality lesson for the kids—it's bloody, it requires you to be ruthless, and some people may take issue with the use of drugs to control your agents. But it's a ball to play.

PAUL C. SCHUYTEMA

Electronic Arts
(800) 245-4525
$59.95

Circle Reader Service Number 438

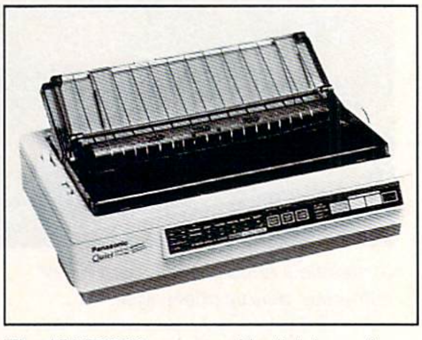
PANASONIC KX-P2023

If I had the same luck with light switches as I do with DIP switches, I'd have to learn to read in the dark and sleep with the lights on. So I was pleasantly surprised to see the Panasonic KX-P2023 dot-matrix printer has no DIP switches at all. None. The printer comes with a 3½ floppy disk with a DOS setup program that takes the place of the missing—but not missed—DIP switches and lets you control the printer from your computer.

The control panel on the printer is easy to understand and operate—not one of the five buttons has more than two functions, and they're all clearly labeled. In addition to simplicity, the P2023 offers 24-pin quality and several useful features, including paper parking, tear-off advance, and automatic loading for both single-sheet and tractor-fed paper. It has four letter-quality typefaces resident, and with 360×360 dpi resolution, TrueType and other graphic soft fonts print beautifully, albeit slowly.

The P2023 offers a Super Quiet print mode; but it's an inherantly quiet printer even in standard mode, and I don't think the slight reduction of printing noise in Super Quiet mode is enough to justify its slower printing.

In spite of its quiet, easy operation, the P2023 can arouse some typical dot-matrix frustrations. If you like precise margins, you can expect to fiddle with your software's margin settings and the paper position for each application that uses its own printer driver. The included Windows 3.1 driver offers greater control over default settings than the printer's DOS setup program (it offers Epson and IBM printer emulations), so once you get the paper positioned and margins tweaked, you shouldn't have to adjust them each time you change Windows applications.



The KX-P2023 comes with disk-based software for easy configuration.

On the printer I tested, tractor-paper jams were another frequent annoyance. The problem appeared to be the clear-plastic paper guide above the platen, which often caught the top edge the paper. (It didn't seem to cause a problem with single sheets.) Avoid the problem by swinging the guide out of the way to keep the first sheet from catching.

Paper feeding problems aside, the KX-P2023 is a good choice for home or small-business use if you want to forego the extra expense of an ink-jet or if you need to print multi-copy forms.

PHILLIP MORGAN

Panasonic
(800) 222-0584
$249.95

Circle Reader Service Number 439

THE NORTON UTILITIES 7.0

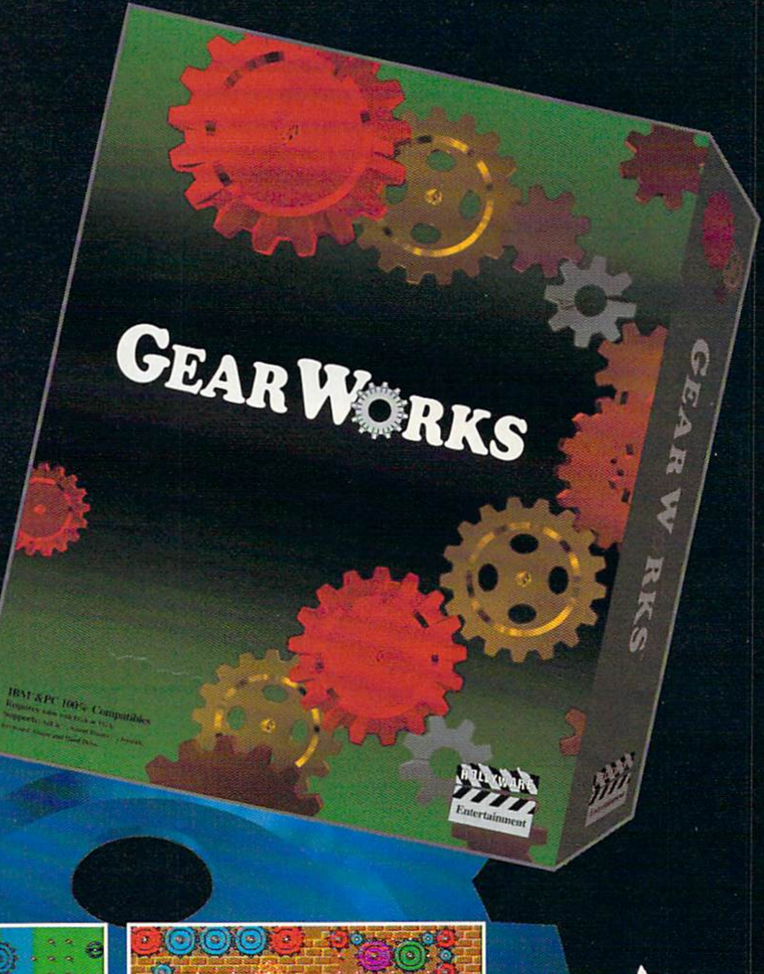
The Norton Utilities 7.0 is Symantec's counterpoint to DOS 6, DoubleSpace, Stacker, and SuperStor. It's true that you'll find minor improvements in most of the 7.0 utilities, but if you're using DOS 6 and one of these compression programs, you'll have more reason to upgrade.

The best of 7.0's compression-savvy utilities is the Norton Disk Doctor (NDD). NDD is a one-stop hard disk hospital that offers everything from diagnostics to surgery—all packaged in an automated, easy-to-use shell. The new NDD has all the powerful discovery and repair tools of its predecessors, plus it's aware of compressed

Over one hundred play areas to test your reflexes and intelligence.

GEAR WORKS!

This puzzle game will keep your gears spinning!



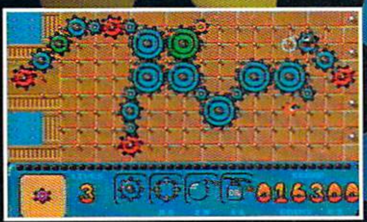
Gear Works is the most unique puzzle game to hit the market in years. In Gear Works you will connect gears of various sizes and colors together in order to transform Twelve Wonders of the Ancient and Modern world into time pieces, while racing against time and friction. Watch out for the Pottins, two gremlin like creatures, that will torment you by rusting the gears and breaking off the mounting pegs.

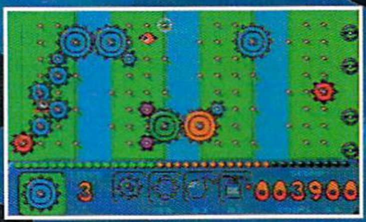
Game features: Various gear types, over one hundred puzzles to solve, bombs to blow up incorrectly placed gears and a gun to shoot those pesky Pottins off the play area.

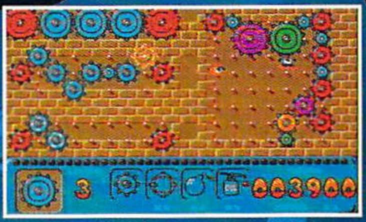
Available in IBM PC and Amiga computers.

Check your local retail stores for Jonny Quest® - *Curse of the Mayan Warriors* and other HOLLYWARE Games.

Circle Reader Service Number 117







HOLLYWARE
Entertainment

HOLLYWARE ENTERTAINMENT P.O. Box 9148 Marina Del Rey, Ca. 90295 (310) 822-9200

See your Local Software Retailer or call HOLLYWARE Entertainment. Copyright © 1993 HOLLYWARE Entertainment, Trademark TM 1993 Sony Electronic Publishing.

drives and handles them intelligently. If you ask NDD to scan a compressed drive, for example, it not only scans the compressed drive but also scans the host drive and tests the data structures on the compressed drive.

It's worth noting, however, that with Stacker, I've encountered some problems that NDD couldn't fix but Stac's Check could. Many users run NDD in their AUTOEXEC.BAT files to catch disk errors on startup, so that they can be fixed before they multiply.

Like NDD, SpeedDisk is hip to compressed drives, but you might feel safer using the defragger that comes with your compression program.

Of the other utilities, the most improved is Disk Editor. This program lets you edit your hard disk on the physical level (sides, tracks, and sectors), the organizational level (partitions, boot sectors, and FATs), and the logical level (files and directories). New in 7.0 is ARM, Advanced Recovery Mode, an automated system that makes recovering data easier. Learning to use Disk Editor may well save your bacon some day.

Arrrrrrrgh! That's the sound most of us make when we accidentally delete a file. Peter Norton made his reputation in 1982 by turning this sound into a sigh of relief with Undelete. Naturally, no edition of The Norton Utilities would be complete without undeleting tools, and this version boasts new incarnations of Undelete and SmartCan, which is the Norton equivalent of Delete Sentry in DOS 6.

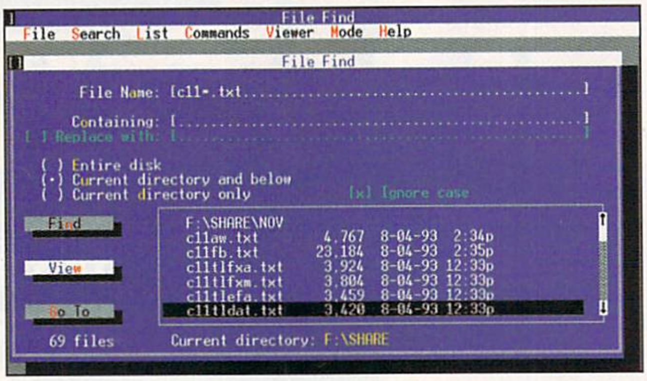
To mention just a few of the remaining tools, you'll find NDOS (a powerful COMMAND.COM replacement based on COMPUTE Choice Award winner 4DOS), much improved system diagnostics, a new version of File Find, and my favorite, NCD, the Norton Change Directory. I wouldn't be caught dead at the DOS prompt without NCD.

For a set of time-tested DOS utilities, The Norton Utilities is a solid choice. And if you're using DOS 6 or a disk compression program, it's definitely worth owning.

CLIFTON KARNES

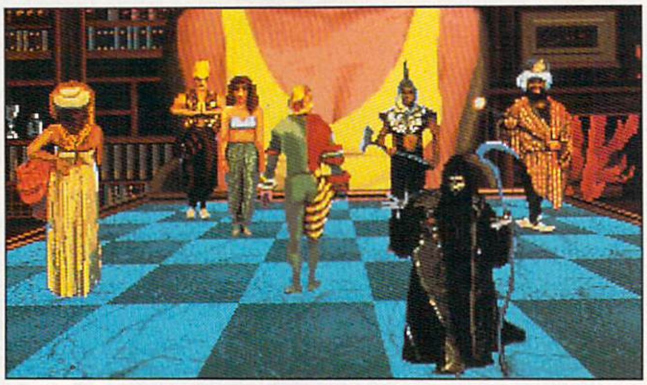
Symantec
(800) 441-7234
$179
$49 (upgrade)
$99 (for DOS 6 owners)

Circle Reader Service Number 440



```
File Name: [c11*.txt.........................................]

Containing: [.................................................]
[ ] Replace with: [...........................................]

( ) Entire disk
(•) Current directory and below
( ) Current directory only                  [x] Ignore case

F:\SHARE\NOV
c11aw.txt          4,767  8-04-93  2:34p
c11fb.txt         23,184  8-04-93  2:35p
c11tlfxa.txt       3,924  8-04-93 12:33p
c11tlfxm.txt       3,804  8-04-93 12:33p
c11tlefa.txt       3,459  8-04-93 12:33p
c11tldat.txt       3,420  8-04-93 12:33p

69 files          Current directory: F:\SHARE
```

The updated version of File Find is just one of many enhanced utilities included with The Norton Utilities 7.0.



Funny, but sometimes gory, animated sequences play when you capture a piece in Chess Maniac 5 Billion and 1.

NATIONAL LAMPOON'S CHESS MANIAC 5 BILLION AND 1

Chess Maniac is a chess program that refuses to take itself seriously. In a market dominated by programs with an emphasis on speed and strength, a chess game with a definite sense of humor is a welcome break.

The manual for Chess Maniac, written in the style of *National Lampoon* magazine, is a delightful parody of everything pompous about intense chess players; however, the program itself is disappointing. It ships on 12 disks and requires 27MB of hard drive space—the installation process took over two hours on my system. Like too many games, it requires EMS, so I had to reconfigure my startup files to play.

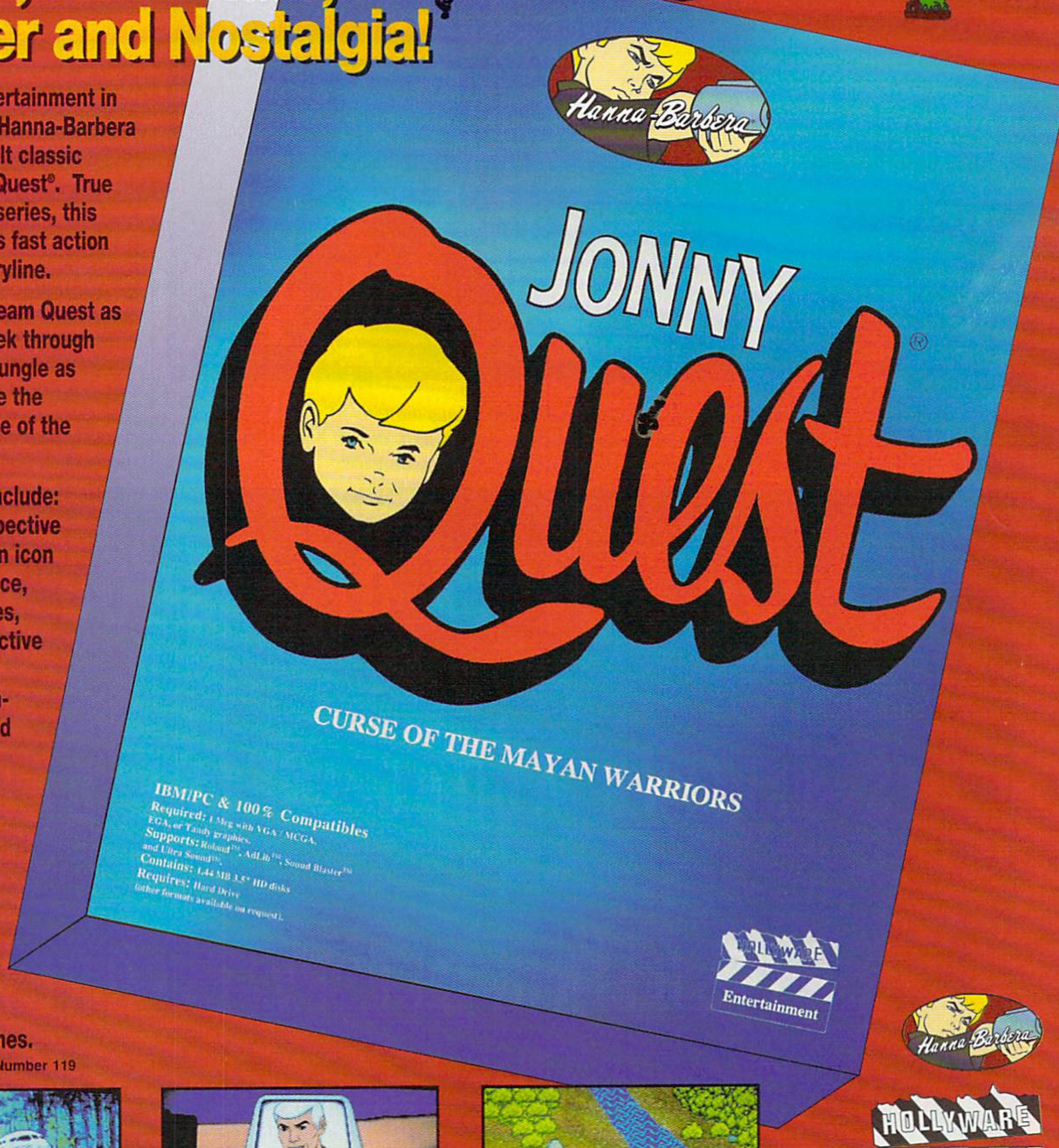
The game is a fairly simple chess game which offers a choice of standard or animated character sets in either two- or three-dimensional views. You choose from ten opponent strength levels (the opponents tend to be weaker than those in other chess programs). Of course, if Chess Maniac was the chess program that grabbed your attention at the local computer emporium, you may be more interested in watching the onscreen antics of the chess pieces than in searching for a cybernetic Bobby Fischer anyway.

The pieces capture each other in unusual ways, ranging from a deathly lambada by the belly-dancing pawn to gory decapitations by the sickle-wielding rook. Frequently, animated distractions flash across the screen, and the program occasionally cheats by stealing your pieces. This is an interesting feature, but it isn't very useful to your computer opponent, since you can easily use the program's board editor to get your pieces back. Moving the pieces with the mouse can be very difficult, and at times it seems impossible to place a piece on the correct square. Two-dimensional and standard chess sets are available to help keep you oriented, as the character board is often cluttered and difficult to see.

Chess Maniac doesn't play world-class chess, but it does add some hilarious touches to what can be a staid, stuffy game. Unfortu-

"Nothing will
stop me this
time!!"

Action, Adventure, Danger and Nostalgia!


Hanna-Barbera
JONNY
Quest®
CURSE OF THE MAYAN WARRIORS
IBM/PC & 100% Compatibles
Required: 1 Meg with VGA / MCGA,
EGA, or Tandy graphics.
Supports: Roland™, AdLib™, Sound Blaster™
and Ultra Sound™.
Contains: 1.44 MB 3.5" HD disks
Requires: Hard Drive
(other formats available on request).
HOLLYWARE
Entertainment

HOLLYWARE Entertainment in association with Hanna-Barbera bring you the "cult classic cartoon", Jonny Quest®. True to the television series, this game emphasizes fast action and a unique storyline.

Join Jonny and Team Quest as they fearlessly trek through the Guatemalan jungle as they seek to solve the mysterious "Curse of the Mayan Warrior".

Game Features include: A 3D raised perspective for exploration, an icon controlled interface, combat sequences, full cast of interactive characters, a full sound track, stunning graphics, and literally hours of entertainment.

Available for IBM PC and compatible machines.

Check your local retail stores for Gear Works and other HOLLYWARE Games.

Circle Reader Service Number 119

Hanna-Barbera

HOLLYWARE
Entertainment

HOLLYWARE ENTERTAINMENT
P.O. Box 9148 Marina Del Rey, Ca. 90295
(310) 822-9200

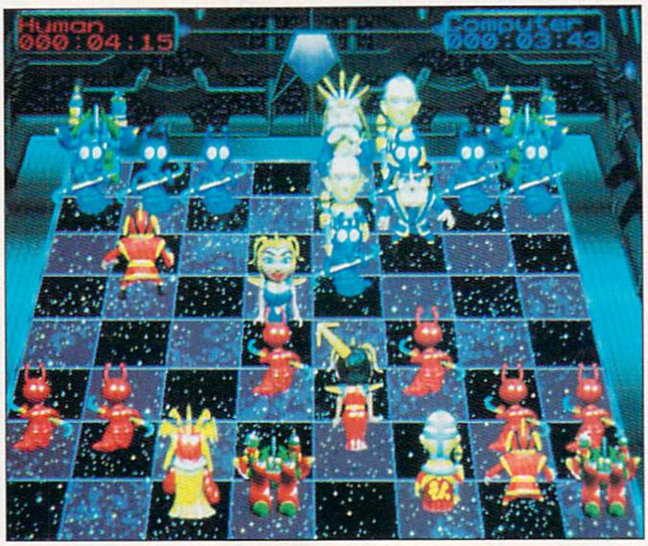
Copyright © 1993 HOLLYWARE Entertainment. Copyright © 1993 Hanna-Barbera Productions, Inc. See your Local Software Retailer or call HOLLYWARE Entertainment.

nately, the difficulty of discerning piece positions, along with the stiff hard drive requirements, puts a bit of a damper on the fun.

JIM SMITH

Spectrum HoloByte
(800) 695-GAME
$69.95 (disk version)
$59.95 (CD-ROM version)

Circle Reader Service Number 441

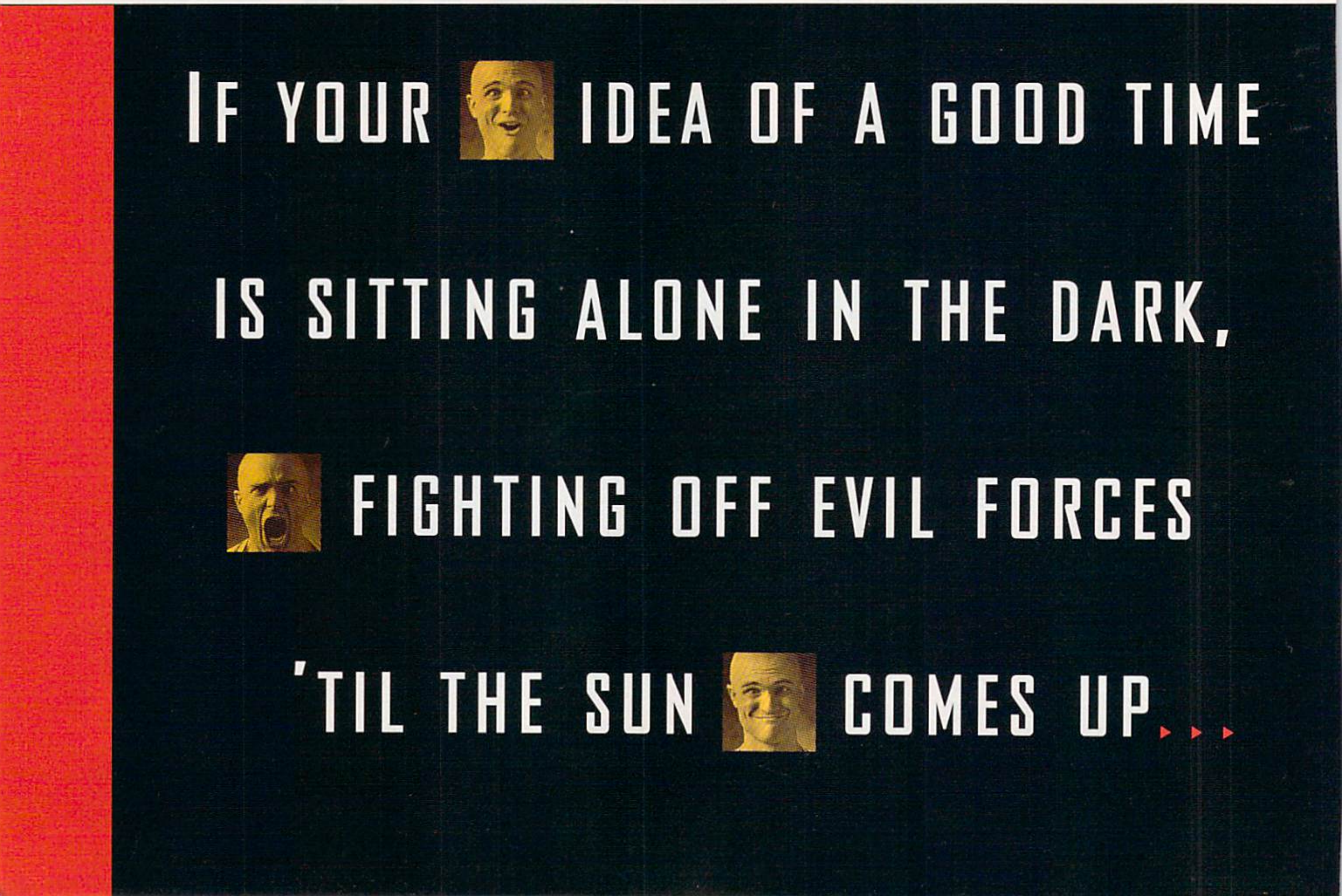


Interplay's spaced-out Battle Chess 4000 takes the classic animated chess challenge into a weird, distant chess future that's full of robots, aliens, and futuristic humanoids.

BATTLE CHESS 4000

Not long ago, Interplay revamped chess, giving the classic game a whole new look and feel. Instead of stoic bishops and banal queens of plastic, ivory, or stone, the original Battle Chess brought pieces to luscious, violent life and breathed a bit of magic into the standard affairs of play. Today, Interplay takes us far beyond the medieval visions of its earlier offering, beyond the Asian feel experienced in its Chinese variant, and headlong into an unearthly future. A.D. 4000, here we come!

If you're familiar with classic chess, you'll be right at home in Battle Chess. The primary graphic innovation is obvious, with each piece a futuristic humanoid of some sort. These pieces possess their own unique characteristics: rough-and-tumble queens that always mean business, leechlike pawns that squish around the board, self-assured bish-


IF YOUR IDEA OF A GOOD TIME
IS SITTING ALONE IN THE DARK,
FIGHTING OFF EVIL FORCES
'TIL THE SUN COMES UP...

ops that practice a science so advanced it seems magical. When the pieces clash, a combat sequence is certain to follow, so keep your eyes on the screen. In Battle Chess 4000 these combat sequences run on the hilarious side. The rook—which transforms from a tiny, inert form into a towering, ambling robot—seems to have the greatest sense of humor. Unfortunately, the combat ends as you might predict; the attacking piece always wins. This predetermination, common to all versions of Battle Chess, marks the ceiling for innovation. Everyone knows a monster robot will squash a leech. As a variant, Interplay could offer chess with more tactical considerations, such as how many attacks a rook can sustain before collapsing or how many attacks a bishop can make before he needs a recharge. Even in A.D. 4000, Battle Chess remains merely computer chess with impressive graphics.

The graphics here *are* outstanding. The SVGA version provides extreme detail, right down to the grimaces and smirks on the pieces' outsize faces. The overall look seems a bit cartoonish, but that, in turn, makes the explosions, decapitations, and general violence more acceptable. Some may find it disturbing that both this game and Spectrum Holobyte's National Lampoon's Chess Maniac 5 Billion and 1 both feature violence at the level of decapitation.

An outstanding array of options including moves by the book, forced moves for the computer, and hints on demand makes Battle Chess 4000 a chess game for everyone. It allows you to take back moves, explore what-if possibilities, and choose from a list of more than 300,000 moves. When the combat animations lose their appeal, you can activate the standard two-dimensional playing field, the familiar face of computer chess. We can hope, however, that the next version will allow us to adjust the speed of the animations. While watching the rook unfold into a robot and walk across the screen proves initially delightful, after only a game or two, the time required for the animation is just aggravating.

If you haven't encountered Battle Chess before, you might want to pick up a copy of Battle Chess 4000. If your tastes run toward the more exotic or to the medieval, consider the other members of the product line. Any version of Battle Chess provides a worthy computer opponent for potential grand masters.

DAVID SEARS

Interplay
(714) 553-6678
$59.95 (SVGA version)
$49.95 (VGA version)

Circle Reader Service Number 442

. . YOU NEED PROFESSIONAL HELP.

A mouse and keyboard are fine for tackling spreadsheets, not teeming legions of blood-thirsty marauders. State-of-the-art CyberMan™ puts an unlimited range of motion within your grasp: three directions [x, y, and z] and three rotations [pitch, yaw, and roll].

Just move or twist it any way you want to go. Plus it's the only controller with vibrating feedback that lets you ***feel*** the action. CyberMan is 100% compatible with conventional mouse applications, and comes with 3D game titles that will pull you into the next dimension in PC entertainment. CyberMan is available now at your local dealer, or call **1-800-732-2923.**

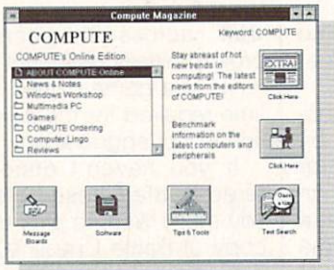
™ Trademarks belong to their registered owners.

LOGITECH

The Senseware™ Company

Circle Reader Service Number 255

Own A Modem?



COMPUTE

Keyword: COMPUTE

COMPUTE's Online Edition

- ABOUT COMPUTE Online
- News & Notes
- Windows Workshop
- Multimedia PC
- Games
- COMPUTE Ordering
- Computer Lingo
- Reviews

Stay abreast of hot new trends in computing! The latest news from the editors of COMPUTE!

Benchmark information on the latest computers and peripherals

Explore COMPUTE on America Online FREE for 10 Hours!

If you own a computer and a modem, you can get even more of the COMPUTE experience with COMPUTE Magazine on America Online. Talk to other COMPUTE readers on interactive message boards or send e-mail to the COMPUTE staff. Participate in live conferences and events, and download programs from the COMPUTE software libraries. Just use keyword COMPUTE to access the leading publication for the home computer user!

You'll also find COMPUTE's sibling publication, OMNI Magazine, on America Online. Or, sample hundreds of other informative and entertaining services, like computing support from leading hardware and software makers, more than 70,000 software programs you can download and keep, and an international e-mail gateway.

Order today to get America's most exciting online service and your free 10-hour trial membership.

1-800-827-6364
Ext. 7912

AMERICA Online®

Use of America Online requires a major credit card or checking account.

KIPLINGER'S CA-SIMPLY MONEY

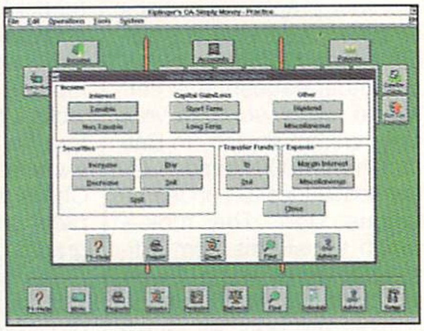
Some would say that you'd have to *give away* a new program to get any kind of market penetration in today's ultracompetitive PC software marketplace. That's exactly what Computer Associates decided to do with its new personal finance manager program: Through November 4, 1993, the company is giving away up to a million copies of Kiplinger's CA-Simply Money. The only charge is a $6.95 fee for postage and handling.

The incredible price doesn't mean you're stuck with a limited, special-version package, either. It's the full-blown package, complete with a thick, heavy, and well-written reference manual. CA-Simply Money is a personal finance manager that also helps you make decisions about mortgages, refinancing, retirement, debt payoff, investments, college tuition, and even household help and payroll. Along with the usual electronic check register, the program includes the Kiplinger Financial Advisor, which tracks all your transactions and offers you personalized financial advice.

CA-Simply Money runs under Windows 3.1 and provides a simple, icon-based user interface. Instead of forcing you to scroll through long lists of accounts looking for the one you need, CA-Simply Money provides Browsers; typing one or more letters produces a pop-up window which contains a list of related buttons, categories, or classifications. This makes recording transactions much faster and easier. And you can easily call up any of 50 preprogrammed reports which provide quick, useful information about your accounts to help control and direct financial matters.

For the novice in financial recordkeeping, CA-Simply Money goes a step past the automatic budgeting systems of other financial programs by automatically prompting for repetitive payments and drafts. Repetitive transactions are recorded so that payees and account distributions are processed automatically. You'll have to compute percentages manually for transactions involving a home office or automobile that's used for business purposes, though; it would be nice if the program had a data feature that would compute these automatically.

The Financial Advisor feature provides context-sensitive advice and comments written by the prestigious Kiplinger editorial staff. Its handy Alert feature can optionally pop up whenever you start Windows, warning you when you need to take care of pending items such as payments or deposits. Financial Advisor will warn you if a recurring transaction seems overly large or small, alerting you, for example, if your normally $80 phone bill jumps to $553. The Advisor feature looks at your current financial situation and offers tips for saving money. For instance, it might advise you to take out a home equity loan to pay off your credit cards, lowering the amount of interest you pay each month. Unfortunately, the financial advice can't currently be printed out for offline review.



Kiplinger's CA-Simply Money is a powerful, but easy to learn, finance program.

I did run into a few quirks when using the program. Check numbers aren't automatically assigned when you enter transactions, a limitation which a company representative said will be corrected in a future release. Also, when I entered after-the-fact transactions, automated date functions became confusing, making entries more difficult than necessary.

CA-Simply Money imports and exports files in Quicken format, exports to any tax-exchange-format (TXF) tax preparation program, and can use DDE to communicate with databases and spreadsheets. Of course, you can print checks on your printer, but CA-Simply Money also works with Prodigy's BillPay USA system to pay bills electronically. You can also use it with CompuServe's online financial database and stock quote system to get updates on stock prices and live financial advice.

For the lucky million or so purchasers who order the program before November 4, CA-Simply Money is the least expensive finance manager program available. But CA-Simply Money is by far the easiest-to-use, most advanced financial recordkeeping and money management package available today—so it's worth taking a look at even at the full retail price.

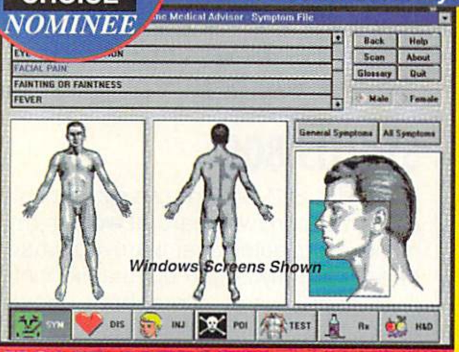
ALFRED C. GIOVETTI

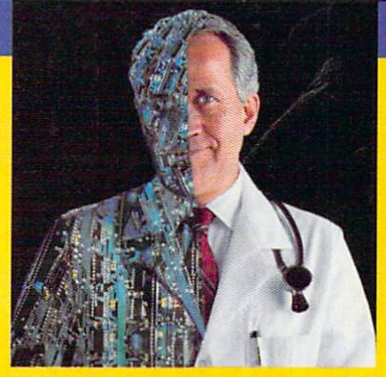
2 GREAT MEDICAL PROGRAMS

Created By Doctors NOT Computer Programmers!

"BEST" Adult Discovery Software
COMPUTE
CHOICE
NOMINEE

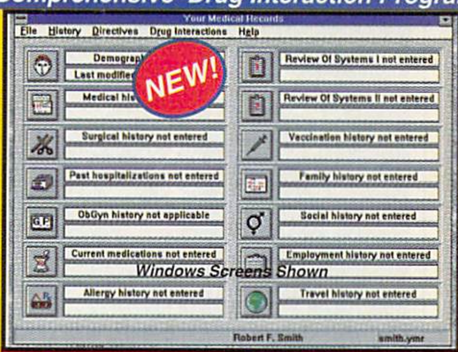
Expert Medical Advice At The Touch Of A Key!


Home Medical Advisor - Symptom File
FACIAL PAIN
FAINTING OR FAINTNESS
FEVER
Back
Help
Scan
About
Glossary
Quit
Male
Female
General Symptoms
All Symptoms
Windows Screens Shown
SYN
DIS
INJ
POI
TEST
Rx
H&D



PIXEL PERFECT

Includes . . .InteRxact The MOST Comprehensive Drug Interaction Program


Your Medical Records
File
History
Directives
Drug Interactions
Help
NEW!
Windows Screens Shown

Demograph…
Last modified…
Medical his…
Surgical history not entered
Past hospitalizations not entered
ObGyn history not applicable
Current medications not entered
Allergy history not entered
Review Of Systems I not entered
Review Of Systems II not entered
Vaccination history not entered
Family history not entered
Social history not entered
Employment history not entered
Travel history not entered
Robert F. Smith
smith.ymr

HOME MEDICAL ADVISOR

- **Fast Answers**
  The ONLY program of its kind to analyze symptoms and provide actual diagnoses
- **Easy To Understand**
  No confusing "medical jargon"
- **The Largest Drug Database**
  Plus extensive info on diseases, injuries, tests, poisons, nutrition & diets

Home Medical Advisor
$87.50*
Your Medical Records
$69.95*
MS-DOS and Windows Versions Available

Your Choice $49.95
or
Both For ONLY $69.95
** List Price*

YOUR MEDICAL RECORDS

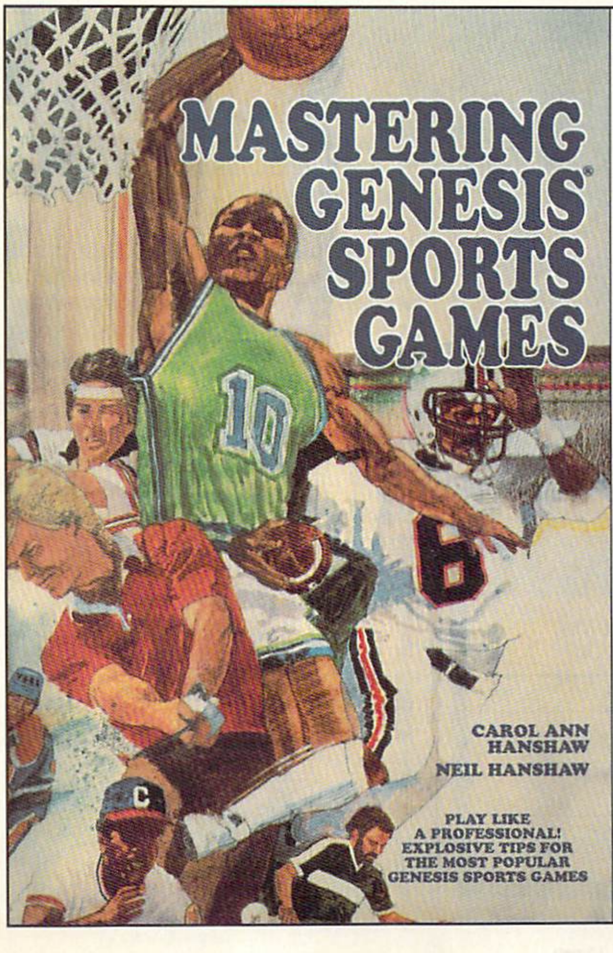
- **14 Complete Medical Histories**
  Keeps and prints YOUR important medical records in two different formats
- **Medical-Legal Documents**
  Prints custom documents like the "Living Will" and "Durable Power of Attorney"
- **Analyzes Over 2,400 Substances**
  InteRact, provides a complete analysis of 250,000 possible drug interactions

TEL (407) 777 - 5353 FAX (407) 777 - 0323
10460 So. Tropical Trail Merritt Island, FL 32952
FREE SAME DAY SHIPPING!

1-800-788-2099
See your Software Dealer or. . .Call Us Today
All Trademarks are property of their respective owners

VISA MasterCard DISCOVER AMERICAN EXPRESS

Circle Reader Service Number 207


MASTERING GENESIS® SPORTS GAMES
CAROL ANN HANSHAW
NEIL HANSHAW
PLAY LIKE A PROFESSIONAL! EXPLOSIVE TIPS FOR THE MOST POPULAR GENESIS SPORTS GAMES

Smash Into Action!

Pound 'Em Into the Ropes!

Get Teed Off!

Mastering Genesis™ Sports Games

Whether you play football, baseball, golf, or any other sports games on your Sega Genesis, you'll find the information and tips you need in this guide. Tips and strategies for 19 of the most popular Genesis sports games.

To order your copy send $9.95 plus $2.50 for shipping and handling (U.S., $4 to Canada and $6 other) to COMPUTE Books, c/o CCC, 2500 McClellan Ave., Pennsauken, NJ 08109. (Residents of NC, NJ, and NY please add appropriate tax; Canadian orders add 7% Good and Services Tax.) All orders must be paid in U.S. funds drawn on a U.S. bank. Mastercard and VISA orders accepted, please include full card number and expiration date. Orders will be shipped via UPS Ground Service. Offer good while supplies last.

Sega and Genesis are trademarks of SEGA.

SECOND EDITION
THE OFFICIAL GUIDE TO
ROGER WILCO
Space Adventures
TM
Jill Champion
The only complete guide to Space Quests I-V. Includes maps, screen shots, and solutions to all five Space Quest adventures.

The Official Guide to ROGER WILCO SPACE ADVENTURES

Second Edition

The complete guide to Space Quests I–V. Includes maps, screen shots, and solutions to all five Space Quest adventures.

To order your copy send $16.95 plus $2.50 for shipping and handling (U.S., $4 to Canada and $6 other) to COMPUTE Books, c/o CCC, 2500 McClellan Ave., Pennsauken, NJ 08109. (Residents of NC, NJ, and NY please add appropriate tax; Canadian orders add 7% Goods and Services Tax.) VISA and Mastercard accepted: be sure to include your account number, expiration date, and signature. All orders must be paid in U.S. funds drawn on a U.S. bank. Orders will be shipped via UPS Ground Service. Offer good while supplies last.

Be a *Penthouse* Photographer!

Introducing PENTHOUSE INTERACTIVE™

Now you can get a taste of the excitement, the allure ... and the outrageousness! With Penthouse Interactive's VIRTUAL PHOTOGRAPHY STUDIO, you, too, can have one of the most envied jobs in the world: *Penthouse* magazine photographer! You'll be amazed by the sensation of having three of the most incredible Penthouse Pets — Julie, Dominique, and Natalie — model for you in full live motion (15 FPS) in your own private photo shoots ... right on your computer!

REQUIREMENTS: Any COLOR MACINTOSH with CD-ROM drive (double speed preferable. We recommend 8MB RAM). IBM compatible/WINDOWS version available soon; place your advance order now for priority shipment.

PLEASE RUSH ME THE PENTHOUSE INTERACTIVE CD-ROM:

$129.95 + $4.50 (shipping & handling) x ______ = $ ____________ **Total Orders = $** ____________

Name____________________ Address____________________

City____________________ State__________ Zip__________

■ Check ■ Money Order ■ Visa ■ MasterCard Credit card holders call toll-free: 1-800-466-9435

Card Acc't.#____________________ Exp. date__________ Signature____________________

I certify that I am 18 years or older.

Payment must accompany order. Allow 4–6 weeks for delivery.
U.S. MAIL ORDER: PENTHOUSE VIDEO, INC., P.O. Box 310173, Newington, Conn. 06131

Computer Associates
(800) 373-3666
(516) 342-5224
$69.99
($6.95 through November 4, 1993)
Circle Reader Service Number 443

STYLUS 800

The Stylus 800, a 48-nozzle ink-jet printer from Epson, was hard at work in my office just minutes after it arrived. I had been using my 24-pin dot-matrix printer to print several letters, but I decided to finish the job with the new Epson. All I did was disconnect the printer cable and plug it into the Stylus 800, which performed flawlessly. I had to adjust the margins from my word processor, but I never even switched printer drivers.

Many older applications may not have a Stylus 800 driver, but the manual suggests more than a dozen Epson SQ- and LQ-series drivers that should work with most applications. I had no problem printing out banners, correspondence, and graphics with the driver that I had used with my dot-matrix printer. For convenience, the Stylus package includes drivers for ten popular applications, including Windows 3.1, AutoCAD 2.5 or higher, WordPerfect 5.1 or higher, Microsoft Word for DOS 5.5, and Lotus 1-2-3 3.1 and 3.1+.

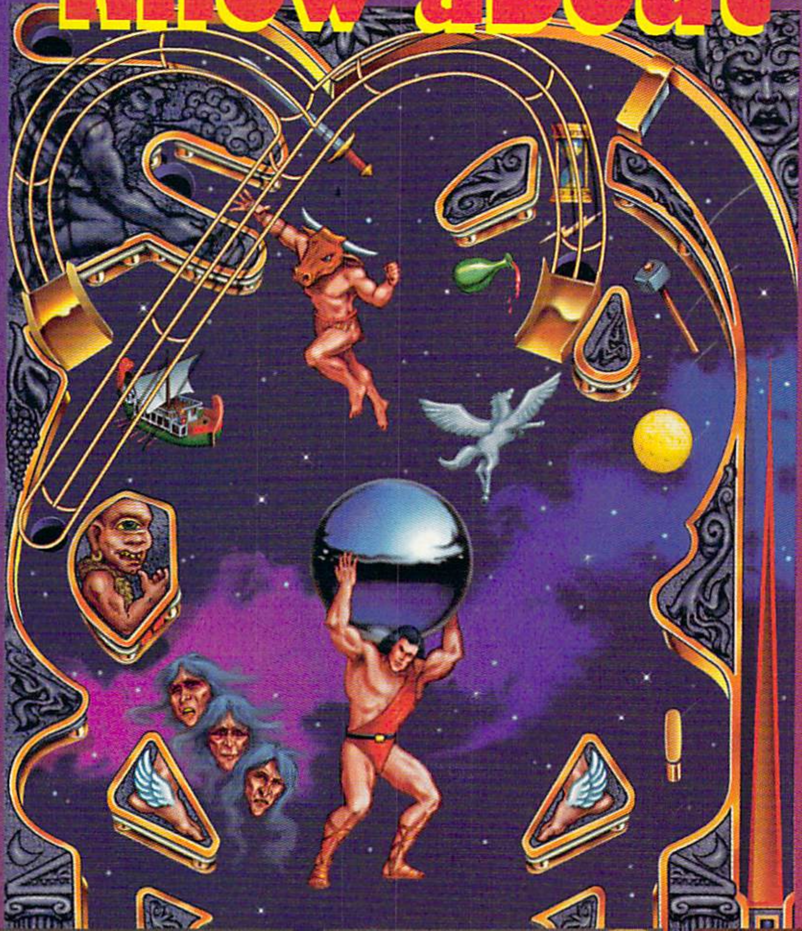
The Stylus 800 delivers crisp 360-dpi text and graphics. Overall print quality is not quite laser-sharp, but it's pretty darned close. The drop-in ink cartridge is rated at 700 pages with 1000 characters per page. I've been cranking out page after page for weeks now, and the print quality is still high. When the ink supply is low, a light on the panel lets you know. Replacing a cartridge shouldn't put much of a dent in your budget; the suggested retail price of a new one is less than $20.

You can load as many as 100 sheets of paper into the 800's built-in paper holder. This is fine for most printing jobs. If you prefer, you can feed single sheets and envelopes manually without disturbing the other paper.

Paper quality does affect print quality, however. If the paper is porous or rough, you may see some blurring. Most conventional computer paper works fine. Should the print quality start to diminish, you can press two buttons on the control panel to clean the printhead. This simple 30-second procedure assures a good stream of ink through the nozzles.

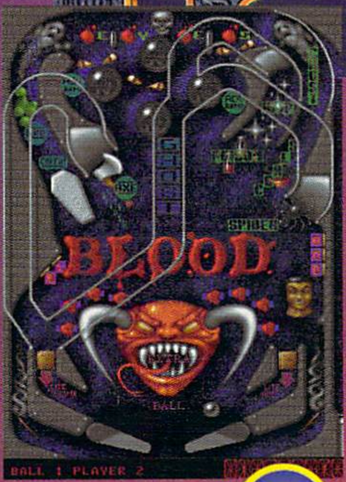
The ink-jet technology makes the Sty-

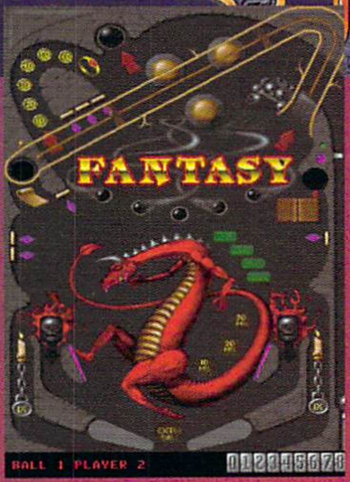
Forget everything you know about pinball.

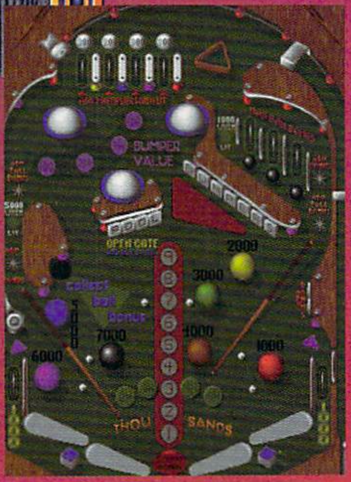


If you love pinball, welcome to its next level. SILVERBALL is not a remake of authentic old-time classics; it's a collection of all new pinball games destined to *be* classics! Choose from 4 tables with graphics so real you can almost get glass, superb voice and sound quality and multi-player capability for up to 4.

With every option imaginable from ultimate flipper control to multi-ball and replay...complete with flashing lights, bonuses, buzzers and bells, it's like having your own personal performance machines right on your PC. SILVERBALL takes you where pinball couldn't go.


BLOOD
BALL 1 PLAYER 2


FANTASY
BALL 1 PLAYER 2
012345678


BUMPER VALUE
OPEN GATE
2000
3000
4000
1000
7000
6000
THOU SANDS

- Full-screen vertical scrolling
- Authentic pinball sounds
- Original music score
- Up to four players
- Drop holes & targets
- Ramps and Rails galore

Silverball

For information call MicroLeague
1-800-334-6572

Circle Reader Service Number 211

Actual game screens may vary

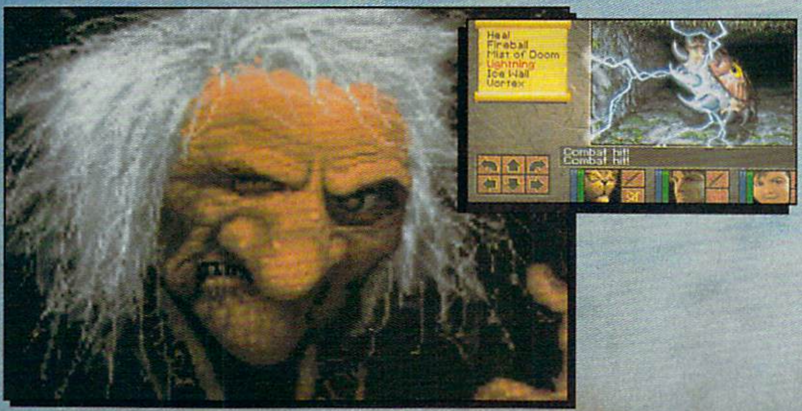
Published by
MICROLEAGUE®
Developed by Epic MegaGames

LANDS OF LORE™

THE THRONE OF CHAOS

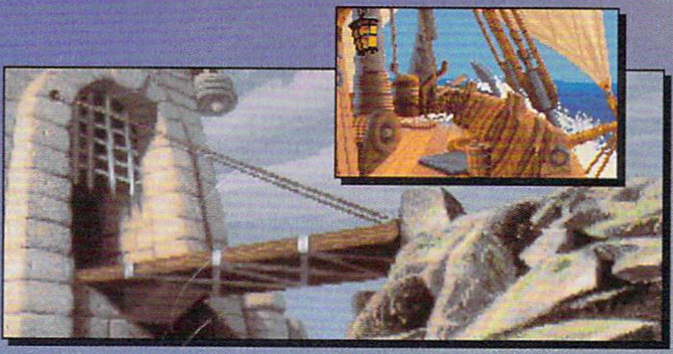
The Dark Army encroaches. King Richard falls. And Scotia beckons you, laughing...

In her mad quest for power, Scotia has ravaged the kingdom. She seeks the throne, yet it eludes her. She's getting desperate. She's getting mean.


Heal
Fireball
Mist of Doom
Lightning
Ice Wall
Vortex

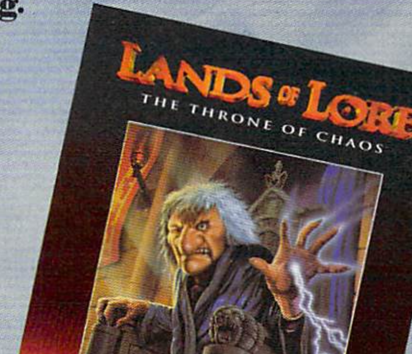
Combat hit!
Combat hit!

CAN YOU STOP HER? DO YOU DARE?



FEATURING

- **Compass and Automapper Included** - Adventure through ancient keeps and living forests. Unearth hidden ruins and haunted caves.
- **Indulge in a Land of Sensory Delights** - Over 20 megabytes of compressed art and special effects. Actually hear the clash of steel! Feel the blows of terrors who slip beneath your guard!
- **Make Friends and Influence People** - Cooperate with the helpful, sidestep the treacherous and destroy the dangerous.
- **Quick and Easy Combat and Spell Casting.**



AN INSPIRED FANTASY RPG EXPERIENCE FROM THE DEVELOPMENT TEAM THAT CREATED EYE OF THE BEHOLDER™ I AND II.

Westwood™ STUDIOS

Distributed Exclusively by

Virgin® GAMES

Available for your IBM PC.

Eye of the Beholder I and II are trademarks of TSR, Inc.
The Eye of the Beholder games, TSR, Inc. and SSI are not connected or related in any way to the Lands of Lore game, Virgin Games, Inc. or Westwood Studios, Inc.
Lands of Lore is a trademark of Westwood Studios, Inc. © 1993 Westwood Studios, Inc.
All rights reserved. Virgin is a registered trademark of Virgin Enterprises, Ltd.

Circle Reader Service Number 132

PENTHOUSE ONLINE™

THE BEST OF PENTHOUSE MAGAZINE AND MORE!

Join the thousands of others who've discovered the world of CyberSex as only Penthouse can present it. Browse through classic letters from Penthouse, Forum, and Variations. View or download the best of Penthouse photos—the Pets, and more—many of which have never been published! Chat with Penthouse Pets . . . and all at low connect charges.

Over the past several weeks, we've featured exclusive photos and online sessions with 1993 Pet of the Year Julie Strain, along with Pets Stevie Jean, Sam Phillips, Leslie Glass, and Amy Lynn, where each of these lovely women has revealed herself more completely than ever.

Plus, our advanced online service lets you preview all photos in a matter of seconds. No more lengthy and expensive downloads before you see what you're getting.

PENTHOUSE ONLINE operates at 9600 bps so we don't waste your time—or money: There's no 9600 surcharge! Only $5.95 a month and 20 cents a minute for most areas.

Plus, we've arranged with U.S. Robotics to offer you a deluxe, 9600-bps fax/data modem, with custom Penthouse Key insignia, for less than $170.

[2400/9600 support; VGA/SVGA (recommended); 386/486 (recommended), 1 MB Video RAM recommended. MS-DOS only.]

DON'T WAIT! SEND FOR YOUR MEMBERSHIP KIT TODAY.

Call 1-800-289-7368

or circle reader service number 103.

lus quiet and reasonably fast. Printing speed is rated at 180 characters per second. The compact size lets the Stylus fit easily into most any work area.

The Stylus has seven built-in character fonts; four of them are scalable from 8 to 32 points in 2-point increments. There's also an economy mode that uses less ink for draft copies and a condensed mode that's handy for printing spreadsheets. Many of the printer's controls can be set by your program rather than from the control panel.

Internal settings control the character tables for different language applications and similar settings. If your software has problems printing scalable font text combined with graphics, the Stylus has a mixed text and graphics mode that should help. There's even a setting for using the printer with several computers on a network.

If you're used to the large size of many dot-matrix or laser printers, you may wonder about the strength and reliability of the Stylus. Don't let its small footprint and light weight fool you. This little gem is a real workhorse. It's proved itself in my office.

TOM NETSEL

Epson America
(800) 922-8911
$449

Circle Reader Service Number 444

THUNDER BOARD

Do you find that hearing "bleep, beep, bloop, buzz" sort of ruins the fantasy when you're playing your favorite flight simulator? Are you tired of watching your computer grind to a halt every time the Windows sound driver plays a digitized sound? It's time to join the multimedia party and purchase a sound card. If you're looking for a quality sound card at a low price, check out Media Vision's Thunder Board.

This half-size 8-bit ISA card includes an Ad Lib–compatible 11-voice FM synthesizer and supports 22-kHz digital audio. The back of the card has audio input and output jacks, a volume-control dial, and a joystick port. An internal connector allows you to mix sound from a CD-ROM drive or Pro AudioSpectrum card.

The card is advertised as being fully compatible with the industry-standard Sound Blaster. It worked perfectly with all the games with which I tried it, as well as with Windows, using the Sound Blaster setting. And like Windows, many games now directly support the Thunder Board as well. I've seen a few reports of problems with Falcon 3.0 and the Thunder Board in some systems, but it worked fine with Falcon when I tried it. Hardware compatibility is no problem; the board functioned perfectly in both a 16-MHz 386SX and a 66-MHz 486DX2 system and even in an Amiga 4000 with a 386SX Bridgeboard. Dynamic filtering on the digital inputs and outputs makes for sound about as clean and crisp as you can expect from an 8-bit sound system.

You can edit digitized sound files using the bundled Thunder Master software. The real fun comes, though, when you plug a microphone into the input jack and sample your own sounds. Your kids will love it, for example, if their own voices welcome you to Windows when you start up your system. You can save disk space by compressing sounds at a 2 : 1, 3 : 1, or 4 : 1 ratio; the Thunder Board will decompress the sounds in realtime.

If you're looking for a card just to play with sampled sounds or add some background music to your games, a 16-bit card is probably overkill. For banishing beeps and buzzes, the Thunder Board is an 8-bit bargain.

DENNY ATKIN

Media Vision
(800) 845-5870
(510) 770-8600
$129

Circle Reader Service Number 445

MICHAEL JORDAN IN FLIGHT

Air Jordan is flying Electronic Arts off the bench and into the middle of the action in the competitive sports game arena. Michael Jordan in Flight's cutting-edge technology makes it a championship-quality sports simulation.

The one-player game lands you in the thick of three-on-three action, directing Jordan and friends on their hometown team from Wilmington, North Carolina. You compete in exhibition or tournament games against seven fictional teams playing the country's hottest pickup basketball. Although informal in spirit, the action unfolds on a squeaky-clean indoor half court, complete with all the professional trimmings: multiple camera angles, instant replays, highlight films, and sportscaster Ron Barr's end-of-game stats.

The designers depart from previous efforts in the genre with full-size animated players, digitized from live-action video. No rotoscoped, computer-enhanced characters here; you see and

Kings Ransom

You want me to make some Zircorel? Sure, I can do it for you if you bring me all of the ingredients

The evil approaches.
The future of the kingdom is bleak.
The people are begging for a miracle.

The kingdom has turned to you to stop the evil Lukhan from seeking revenge in his crusade to ravage the land.

Battle over 40 different types of creatures with your choice of weapons and armor. Travel to six cities and visit over 150 locations including the mysterious forest of Zur, the twisted Mazes of Kheas and the Crypt of the Lost Soul. Your quest will ultimately take you to the Mountain of Kandor to battle the vengeful Lukhan in the final struggle.

The King's Ransom awaits you, valiant warrior... take the ultimate adventure and wear your bravery with pride!

Imagine...

- ➢ 2500 frames of animation, 500 different characters to interact with
- ➢ Travel to cities, dungeons, temples, shops, armorers and more
- ➢ Countless unpredictable scenarios and excellent graphics
- ➢ Stunning movie-like soundtrack with sound effects and speech
- ➢ Hundreds of hours of adventure gaming

READYSOFT

ReadySoft Incorporated
30 Wertheim Court, Suite 2
Richmond Hill, Ontario, Canada L4B 1B9
Tel: (416) 731-4175 Fax: (416) 764-8867

Circle Reader Service Number 163

King's Ransom is a trademark of ReadySoft Incorporated - ©1993 ReadySoft Incorporated

control photorealist images of actual players. The technique is visually stunning, but the task of simultaneously animating six digitized figures weighs heavily on system resources. Don't expect smooth play on anything less than a 33-MHz 386 machine with as much expanded memory as you can muster. The game also offers limited support for SVGA cards. Hi-res mode looks great, but it's virtually unplayable on an average PC, with characters moving as if glued to the floor.

True to its roots in street basketball, gameplay is mostly improvised, featuring only four preset offensive plays. Unfortunately, there's no provision for designing your own shots. You can control either Jordan exclusively or the player closest to the ball. Jordan's trademark moves are all here, but unless you're next to the bucket, control is limited to generic passing, jumping, and attempted steals. One of the game's best attributes is its crisp sampled sound effects, including Jordan's own colorful digitized asides during the heat of play; "Thanks for the Nike poster!" he exclaims when he makes a particularly pretty jump shot.

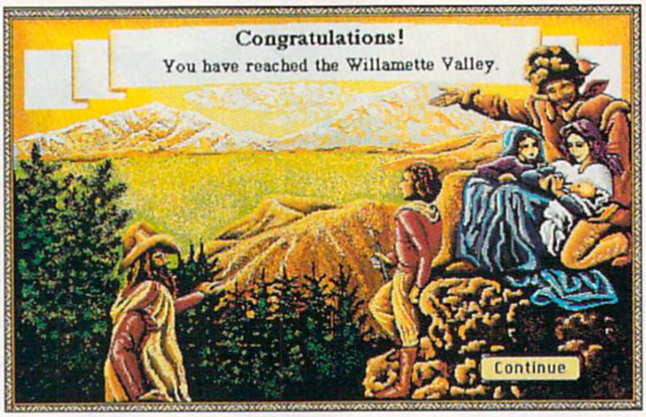
Given the power to drive its high-end graphics engine, Michael Jordan in Flight soars beyond any hoops action seen on the computer screen. However, the game's scant features and unfinished, experimental feel suggest that the best may be coming in Michael Jordan II.

SCOTT A. MAY

Electronic Arts
(800) 245-4525
$69.95

Circle Reader Service Number 446

THE OREGON TRAIL


Congratulations!
You have reached the Willamette Valley.

The Oregon Trail, one of the first educational computer games, is available in a new VGA edition.

Migrating westward across the United States in the 1840s was a hardship few of us today can appreciate. When you consider the treacherous trail through the wilderness between Missouri and Oregon—a trail fraught with danger, sickness, and even death—it's a wonder this great country ever managed to grow from sea to shining sea. While the trip today is as easy as hopping on the interstate, MECC's Oregon Trail (in a new deluxe VGA edition) on your computer will let you experience the trials that the pioneers faced on the 2000-mile journey across America's unsettled frontier.

You start your journey by assigning your character one of eight occupations; your choice determines the game's overall difficulty. Then it's off to Matt's General Store, where you purchase supplies, including oxen, clothes, bullets, food, and various wagon parts. Once supplied, you hit the road and hope for the best. You and your four companions will have many decisions to make and hardships to overcome before reaching Oregon's Willamette Valley.

On the trail, you must hunt for food, cross rivers, repair your wagon, rest in order to heal sick companions, fight bad weather, and handle any number of other difficulties. Disasters, too, need to be dealt with. You never know, for example, when a fire in your wagon may destroy supplies or when death will strike sick companions. Luckily, you can stop at various landmarks and forts along the way to rest and stock up on supplies. The online guidebook provides historical background on these nineteenth century locales. In addition, you can talk to people during your travels to gather information.

In this new VGA edition, the Macintosh-like displays feature a colorful miniwindow that shows a map of your journey or a graphic of the current landmark. Digitized sound effects have been added to the program, although they're sparse; they include simple effects such as gunshots and wagon wheels breaking. Still, the new graphics add much to a classic educational game, a game that's easy for older elementary-school children to learn and interesting enough for adults to enjoy as well.

CLAYTON WALNUM

MECC
(800) 685-6322
(612) 569-1500
$59.95

Circle Reader Service Number 447

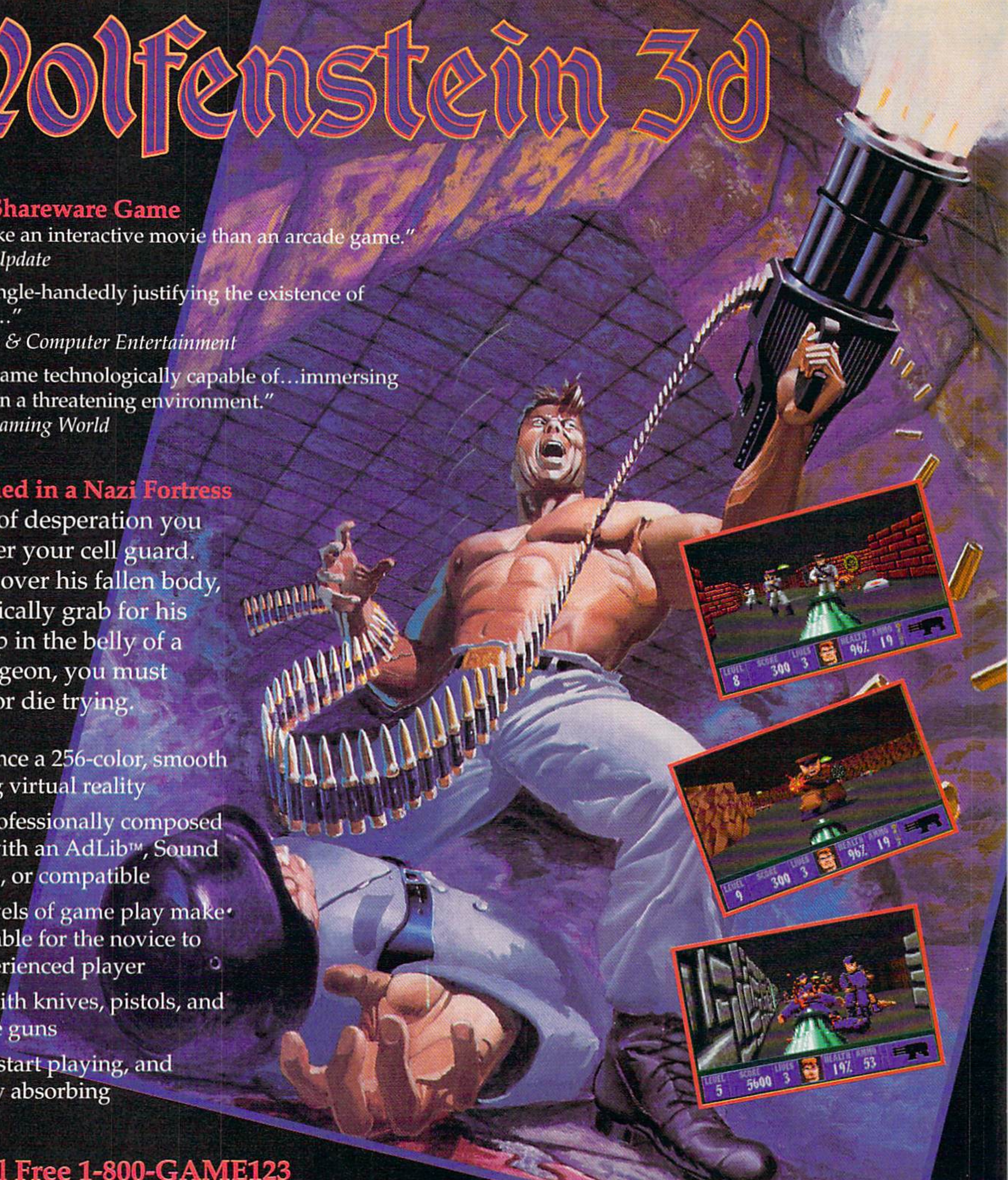
A PLACE FOR MY STUFF

A Place for My Stuff is just what its name implies: a place (relational database) for your stuff (random information you want to store). Since it's not a full-blown database like Access or FoxPro, it requires no programming knowledge. This makes it easier to use but more limited than a more structured database.

Adding an entry to a database is as simple as typing a sentence. The program converts the sentence into grammatical elements and places the words in their appropriate fields, cutting the extraneous verbiage. For example, you could activate the sentence template and type *101 Dalmatians is a great video for kids,* create a new category called Videos, and start tracking your videotape collection. Or you could use the name-and-address template to enter address data.

You can view your records one at a time in detail or in a list format. You can set filters to search for items that share common characteristics. Unrelated items can be linked by clicking on them in a list and saving them as a group.

Reports are easier to format than in a traditional database, but they aren't com-


LEVEL 8 SCORE 300 LIVES 3 HEALTH 96% AMMO 19
LEVEL 9 SCORE 300 LIVES 3 HEALTH 96% AMMO 19
LEVEL 5 SCORE 5600 LIVES 3 HEALTH 19% AMMO 53

Wolfenstein 3d

Hottest Shareware Game

"…more like an interactive movie than an arcade game."
Shareware Update

"Almost single-handedly justifying the existence of shareware…"
VideoGames & Computer Entertainment

"The first game technologically capable of…immersing the player in a threatening environment."
Computer Gaming World

Imprisoned in a Nazi Fortress

In an act of desperation you overpower your cell guard. Standing over his fallen body, you frantically grab for his gun. Deep in the belly of a Nazi dungeon, you must escape—or die trying.

- Experience a 256-color, smooth scrolling virtual reality
- Hear professionally composed music with an AdLib™, Sound Blaster™, or compatible
- Four levels of game play make it enjoyable for the novice to the experienced player
- Battle with knives, pistols, and machine guns
- Easy to start playing, and instantly absorbing

Call Toll Free 1-800-GAME123

For the cost of shipping and handling, only $4.00, you'll receive Episode One, *Escape from Wolfenstein*. Or download Episode One and pay no shipping and handling. Call the Software Creations BBS and check out our FREE Apogee file section. BBS Phone Lines are:

- (508) 365-2359:*2400 BAUD*
- (508) 368-7036:*2400-9600*
- (508) 368-4137:*2400-14.4K*

Episodes two through six are sold separately and can be purchased by calling Apogee's toll-free number, shown above.

APOGEE

P.O. Box 476389
Garland, TX 75047

id INC SOFTWARE

Circle Reader Service Number 300

Not Recommended for Younger Viewers Due to Realistic Depictions of Violence

Wolfenstein 3-D requires an IBM or 100% compatible computer with 640K RAM, a VGA graphics card, and a hard disk drive. Extended memory (XMS), expanded memory (EMS), joystick, and mouse are optional. IBM is a registered trademark of International Business Machines, Inc. Sound Blaster is a registered trademark of Creative Labs, Inc. AdLib is a registered trademark of AdLib, Inc.

Voyages
CATALOG GROUP

The most sensual catalogs ever collected in one master edition.

What is the **Voyages Catalog Group**? . . . Some of the most sensual catalogs in the world are so sophisticated, so unique, so specialized, so cutting edge that you never get a chance to see them. Why? Because they appeal to a very small segment of the population . . . a very targeted group of special people. People who are curious, and adventurous, people who either know what they want or at least what they don't want (boredom), people who aren't afraid to take a leap into the inner conscience of their sensual beings, people who lust for the release of the sensuality within themselves, people who want to experience life . . . now, people who are not afraid, people who are afraid but do it anyway, people who dare to be themselves if they know themselves, or dare to find out who they might really be.

Are you one of these people? If you are . . . read on.

Voyages Catalog Group has assembled this connoisseurs collection of the most incredible publications offering the most specialized erotic product lines from around the world. And, now they're all available in one 64 page full color mail order catalog. A collection beyond belief in it's scope and completeness. A collection unsurpassed in the annals of American erotic entertainment. And, every item offered can be yours within days.

Open a new world of erotic adventure today by sending $10 (a $40 value if ordered seperately) for your first copy of the **Voyages Catalog Group**, ***plus a $10 savings coupon.***

If you're not completely enthralled, send it back for a full refund . . . no questions asked, or use the **$10 off coupon** against your first order of the most unusual sensual product collection ever assembled.

Rushed First Class to your door!
CREDIT CARD ORDERS:
CALL 415-896-0944
Mon.-Fri., 9-5 Pacific Time
OR FAX! 415-896-0933
24 hrs a day, 7 days a week.

Send to: DDI, P.O. Box 77902, Dept. **4CPT110193,**
San Francisco, CA 94107-0902

PLEASE PRINT CLEARLY

Name ....
First Last
Address ....
Address ....
City ....
State .... Zip ....
Phone (............) .... - ....

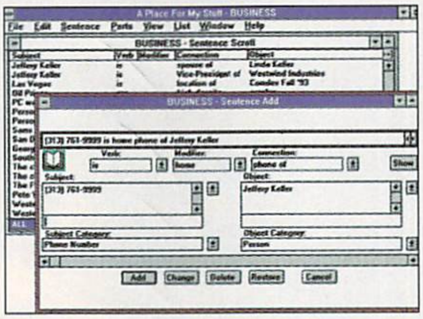
☐ Please rush me my first copy of Voyages Catalog Group. I have enclosed $10.

Cash ☐ Check ☐ Money Order ☐ Credit Card ☐

X
Authorized Signature - I am over 21 years of age
__/__ Date Exp.
Credit Card #
- - -

pletely automatic. You'll still have to define headers and footers, margins, column width, and spacing.

A Place for My Stuff uses a standard Windows interface, with pull-down menus, dialog boxes, and pick lists for commonly used responses. Data can be imported from and exported to other copies of the program, or in ASCII format.


A Place For My Stuff - BUSINESS
File Edit Sentence Parts View List Window Help
BUSINESS - Sentence Scroll
Subject Verb Modifier Connection Object
BUSINESS - Sentence Add
Verb: Modifier: Connection:
Show
Subject: Object:
Subject Category: Object Category:
Add Change Delete Restore Cancel
ALL

Jeffrey Keller is spouse of Linda Keller
Jeffrey Keller is Vice-President of Westwind Industries
Las Vegas is location of Comdex Fall '93

(313) 761-9999 is home phone of Jeffrey Keller
Verb: is
Modifier: home
Connection: phone of
Subject: (313) 761-9999
Object: Jeffrey Keller
Subject Category: Phone Number
Object Category: Person

A Place for My Stuff lets you create database entries using normal sentences.

By sacrificing power and customizability for simplicity, A Place for My Stuff cripples itself. Its sole notable advantage over low-cost PIMs lies in its ability to interpret complete sentences. But even users who appreciate not having to learn a database language might be frustrated its limitations.

Still, it's capable at what it does. It's easy to use, once you understand its structure. And if you're more enamored with writing a sentence and viewing data in that format than more rigid database screen shapes, it may be a good choice for you, especially with its low street price of about $79.

Quadrangle has compiled several add-on databases that contain information on topics like PC software and hardware, vacation and travel, and sports. These range from $9.95 to $17.95, and, if they sound useful to you, might make A Place for My Stuff the right place for your database information.

KATHY YAKAL

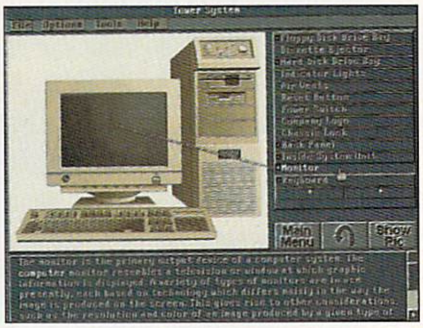
Quadrangle
(313) 769-1675
$129

Circle Reader Service Number 448

COMPUTERWORKS

If you're mystified by your computer's inner workings, curious about the many boards and peripherals you can add to it, or interested in the development of computers, Software Marketing's ComputerWorks can be your graphic guide.

ComputerWorks packs diagrams of everything from connector cables to motherboards, a time line that starts with the abacus and ends with the latest microprocessors, and loads of information on related topics. You can browse through screens of text and illustrations, use an index to locate specific topics, or follow lesson plans. Many text entries include hypertext—highlighted words or phrases on which you can click to see a definition or a cross-referenced illustration.



ComputerWorks is an online reference that tells you all about your computer.

With so much information, getting through ComputerWorks in one sitting would be a daunting task. It's best suited for browsing in your spare time, and its tools include bookmarks to keep your place or mark a screen to which you want to return. A button bar at the bottom of the screen makes navigation a breeze. After you've spent some time with the program, you can test what you've learned by taking one of its eight topical quizzes. (Watch out for the history quiz!)

You can print any of the text or graphics from within the program or export them for use in your word processor or desktop publishing software. The graphics are colorful and detailed and would be useful as computer hardware clip art.

Unfortunately, ComputerWorks' many graphics make it a fairly large program to keep on your hard drive, taking up about 5MB. Installation is easy and relatively quick, so you can take the program off your hard drive after you've gone through it a few times and reinstall it if you need it later.

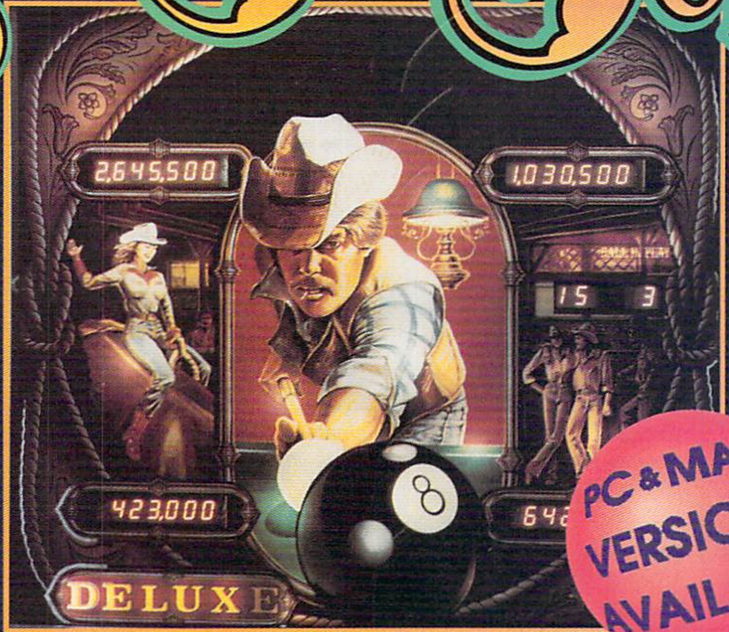
ComputerWorks is filled with useful information, but it won't take the place of a manual or reference book. One mail-order outlet was selling it for $55. That seems a bit pricey compared to a good book, particularly if you're the only one who will use it. But ComputerWorks is a good introduction to computers, and for a teacher or family, it might prove more flexible and accessible than most introductory books. Although it contains an abundance of information, ComputerWorks is general

Bally

INTRODUCING
THE EXPERIENCE OF REAL PINBALL

Distributed By
Brøderbund®

Eight Ball Deluxe™



AMTEX, the maker of the award-winning and critically acclaimed Tristan™, is proud to announce the release of Eight Ball Deluxe, the world's most popular traditional pinball game. It's the first of many pinball favorites to be released in the "AMTEX Pinball Classics" series.

Eight Ball Deluxe is all the fun and excitement of the original game, captured in an awesome simulation. Amazing high resolution graphics, authentic speech, digital sound effects, plus all the mechanics of real pinball!

After chalking up, you'll bank shots, rack up bonus points, then shoot for the exciting and elusive Deluxe. All with three, fast moving flippers that allow for ball trapping and strategic shot making – a must for pinball aficionados!

Imagine all this explosive action, without waiting for a machine or the need for a pocket full of quarters. And you can play with up to four players. So relive the exciting thrills of the arcade today with friends. Over and over again!

Watch for more of the classic games you grew up with... "you big sausage!"

For product information, send your name and address to: AMTEX Software Corporation, P.O. Box 572, Belleville, Ontario K8N 5B2 or call 1-613-967-7900 Fax: 1-613-967-7902.
Suggested retail price $59.95

AMTEX™

PinBall

All trademarks are the property of their respective companies. Copyright © 1992 AMTEX Software Corporation. © 1981 EIGHT BALL DELUXE™ is a trademark of Midway Manufacturing Company (makers of BALLY® pinball games). Used under license. Midway Manufacturing Company is a subsidiary of WMS INDUSTRIES, INC. All rights reserved.

enough in scope that it won't be dated by the time you get it installed.

PHILLIP MORGAN

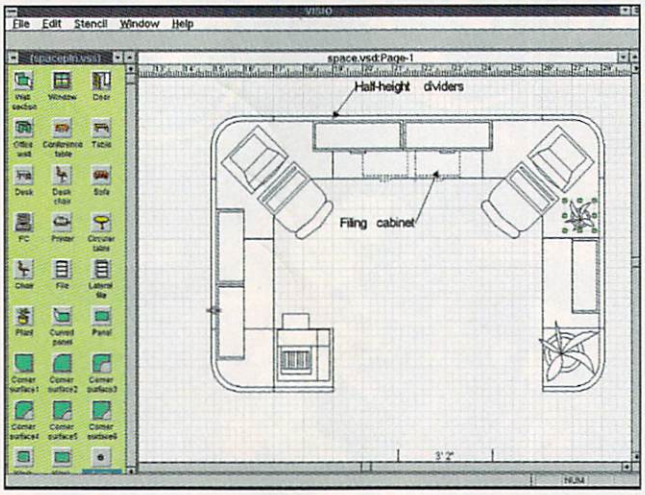
Software Marketing
(602) 893-2400
$79.95
Circle Reader Service Number 449

VISIO

Few tasks are more daunting to nonartists than having to create good-looking business or technical graphics. For all their claimed ease of use, most drawing programs—with their multiple tools, drawing modes, and nested sets of features—aren't easy at all. Worse, with most applications it takes way too much time to create anything more complex than a pie chart, and if you're not artistically inclined, the results are likely to look amateurish.

Visio is one drawing program that does just what it says: It makes creating business graphics a snap. The key to Visio's simplicity is its drag-and-drop approach to drawing. If you've ever used technical-drawing stencils—those green plastic sheets with cutouts of flow chart symbols, architectural shapes, and the like—then you already know how to use Visio. Visio has its own versions of those plastic stencils, with intelligent symbols (called SmartShapes in Visiospeak) for engineering schematics, flow charts, organization charts, network layouts, and 11 other common types of drawings. Additional stencils are available from Shapeware, or you can create your own.

The stencil floats in a window next to the main drawing area, and all you have to do is drag the desired SmartShape from the stencil to its place on the drawing. You can drag the shapes around, group them, add text, and attach connecting lines that extend and contract as adjustments are made to the drawing. Each SmartShape is backed by a minispreadsheet that defines the shape's geometry, text style, and other characteristics. Spreadsheet users can program shapes to perform and display calculations. Though Visio lacks most of the mode-based drawing tools contained in other drawing programs, it does have a smart pencil tool that knows when you are trying to draw a straight line or a curve and creates a geometrically perfect line.



You don't have to be an artist to create impressive charts and pictures with Visio, thanks to its shape library.

No professional artist will want to use Visio as his or her only drawing tool. It lacks many high-end features, such as 24-bit color and PostScript support, gradient blends, and object blending. But if you have to crank out lots of technical drawings of low-to-moderate complexity and don't want to spend a lot of time or money doing it, then Visio is for you.

STEVEN ANZOVIN

Shapeware
(206) 467-6723
$299
Circle Reader Service Number 450

SHERLOCK

MS-DOS has seen many improvements over the years, but unfortunately, it's still saddled with the painful filename limitation of eight-plus-three characters. When you create a file, you must make up some clever abbreviation to remind yourself of the file's contents. But a few months later, you probably can't remember whether you stored your expense report as M07EXP.EXC or EXPRPT7.EXC and you're forced to go on a tedious search.

Sherlock is designed to solve this problem. It organizes your hard disk files just as you would your paper-based files in an office. Files go into folders, folders go into drawers, drawers go into cabinets, and cabinets go into offices.

The program runs under Windows and comes up as a TSR when you use the Save As command from a Windows application. I used Sherlock often with Lotus Ami Pro, for example. The Sherlock Save card asks you for a document description, which can be many words; document type (memo, car expenses, or anything else you like); contact; user name; format; and keywords. Most of these are optional, and when you finish the task, the program asks where you wish to store the document.

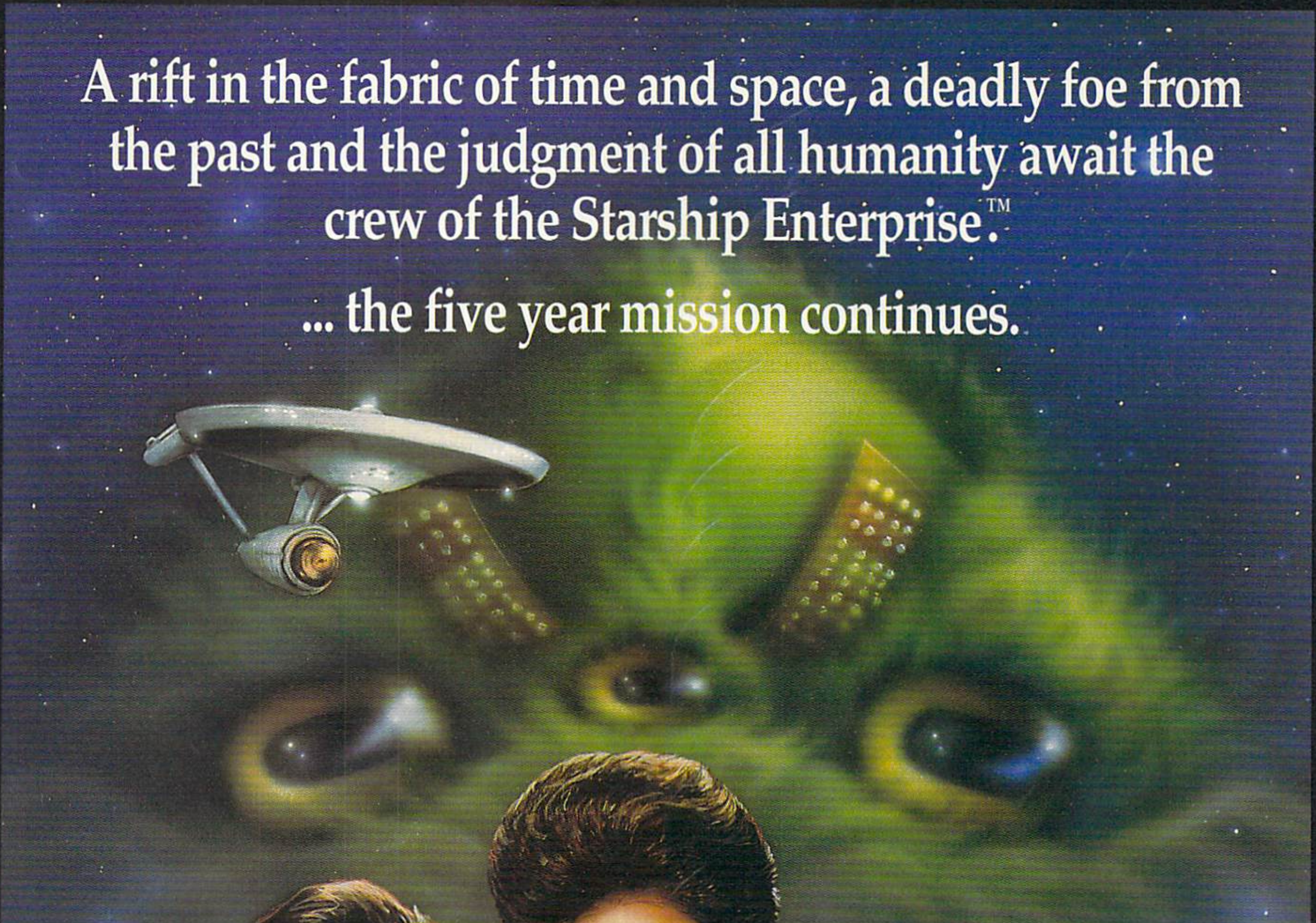
The first time through, you name an office, a file cabinet, a drawer, and a folder. Each of these names can consist of several words. Sherlock remembers these, and when you save your next document, it offers you your earlier system, which you can change or supplement at any time.

The fun comes when you wish to retrieve a document. Perhaps you've forgotten which folder or drawer or cabinet you used. Sherlock will find documents for you on the basis of words in the description, document type, or keyword list and present you with a list of those documents which meet your specifications. Choose one, and Sherlock will tell you where it is filed and open it if you wish. (The newest release also supports standard MS-DOS filenames.)

Sherlock is a very good program. It's fast, friendly, and easy to learn. The manual is well written, and the tutorial is very helpful. Sherlock offers a solution to your filing problems that's better than a file clerk—and much better than trying to remember MS-DOS filenames.

CHARLES IDOL

2010 Software
(800) 952-2314
$139
Circle Reader Service Number 451



A rift in the fabric of time and space, a deadly foe from the past and the judgment of all humanity await the crew of the Starship Enterprise.™

... the five year mission continues.

Join Captain James T. Kirk and the crew of the U.S.S. Enterprise™ in all new episodes that place *you* in command. Beam down to alien worlds, communicate with new life forms and take the helm as you join the legendary crew of the Starship Enterprise™ in their continuing five year mission to explore the final frontier.

Interplay™
17922 Fitch Ave.
Irvine, CA 92714
(714) 553-6678

Software © 1993 Interplay Productions, Inc. All rights reserved. Star Trek™,® and © 1993 Paramount Pictures. All rights reserved.
Star Trek is a registered trademark of Paramount Pictures.

MYSTERY AT THE MUSEUMS

Washington's massive Smithsonian Museums form a fantastic backdrop for learning in Mystery at the Museums, Binary Zoo's educational whodunit. In addition to building logic skills and engaging in creative thinking, players are exposed to a wealth of information culled from the Smithsonian's 12 world-famous museums.

Your guide on this whirlwind tour is Edison, a squeaky-voiced little chap whose hair, complexion, and clothing color can be modified by the player. After inspecting your choice, Edison responds, "Cool!" He then leads you to the office of Smitty, a private detective in charge of a most peculiar case: It seems that somebody has been playing hide-and-seek with the museum exhibits, misplacing dozens of treasures and artifacts. Your job is to visit each museum and, by solving a puzzle, locate a missing exhibit piece. A presidential visit, scheduled for 10:00 the next morning, adds urgency to your quest.

The program targets ages 7 to 14 and does a tremendous job of satisfying this broad range with eight progressively challenging skill levels. Advanced players can also create and save their own custom levels with the icon-driven game editor. The 16 puzzle types are both entertaining and surprisingly sophisticated. The puzzles cover memory, logic, mathematics, spatial relationships, pattern matching, and general knowledge. Along the way, almost as a bonus, players are treated to tidbits of Smithsonian knowledge, carefully disguised as puzzle pieces, clues, and solutions. All the puzzles offer multiple levels of difficulty, assuring long-term interest for all age groups. Also worth noting are the context-sensitive help screens, responsive mouse controls, and excellent audiovisual feedback.

Another hallmark of Binary Zoo products is the magnificently rendered graphics, available in regular 256-color VGA or crisp high-resolution Super VGA. The game's 30-plus screens unfold like an exceptional artistic vision.

Mystery at the Museums takes its distinct style from Artech Digital Entertainments' Rick Banks and Paul Butler, best known for their long, prolific association with Accolade. The designers have definitely found their creative niche at Binary Zoo, and this program is one of the best works of their careers.

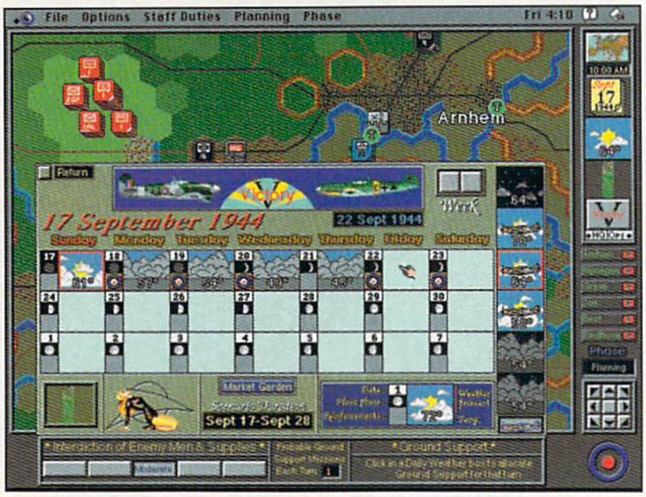
SCOTT A. MAY

Binary Zoo
(518) 298-2470
$34.95

Circle Reader Service Number 452

V FOR VICTORY: MARKET GARDEN

Market Garden, the third game in Three-Sixty Pacific's V for Victory line, is more likely to open up the line to a wide audience than either the hedgerow slugfest of Utah Beach or the relatively obscure cauldron that was Velikiye Luki.


File Options Staff Duties Planning Phase
Fri 4:10
Arnhem
Return
Victory
17 September 1944
22 Sept 1944
Week
Sunday Monday Tuesday Wednesday Thursday Friday Saturday
Market Garden
Sept 17-Sept 28
Interdiction of Enemy Men & Supplies
Ground Support
Moderate
Planning

V for Victory: Market Garden is one of the best computerized implementations of classic board wargames yet.

Market Garden was an ambitious plan to plant the Allied flag on German soil before the winter of 1944–45 and so speed the end of World War II. The problem: Paratroopers assigned to seize a series of six critical bridges across Holland in September 1944 weren't aware of the presence nearby of substantial German forces—including two SS panzer divisions—until they were forcefully made aware of them. The results were heavy losses, retreat, disaster. This battle was the subject of the popular film *A Bridge Too Far.*

Market Garden shares the same basic look and feel of its predecessors in the series. Among V for Victory's strengths are ease of use, with an intelligent click-and-drag system for moving units; an efficient toolkit of micromanagement controls; shimmering Super VGA displays (war games simply don't look any better than this); an array of what-if variants and scenarios that give the game a long life; and the ability to delegate authority to your staff.

Better AI means you'll face a more rigorous challenge than in earlier VfV games. This is on top of the substantial difficulty of the Market Garden campaign.

Rather than offering set-piece battles in the fashion of the earlier two games, Market Garden forces more multidimensional thinking, as players have to deal simultaneously with several mini-fronts—sometimes widely separated along the narrow corridor—operating under a variety of different circumstances and pressures.

Market Garden is every bit as solid as its predecessors, and when Three-Sixty upgrades the game, it will become the first in the series to accommodate modem play. My only misgiving is that Market Garden and its brethren are essentially board games played on a computer, complete with hexes, phases, and turns. This seems to slight the medium's potential for realistic, free-flowing, simultaneous combat. Still, as far as computerized board games go, you'd be hard-pressed to find one smarter and better-looking than Market Garden.

PETER OLAFSON

Three-Sixty Pacific
(800) 245-4525
(408) 879-9144
$69.95

Circle Reader Service Number 453

Introducing FLIGHTSTICK PRO™

Flying The Best . . .

Just Got Better.

Look for CH Products' VIRTUAL PILOT, FLIGHTSTICK, GAMECARD 3 AUTOMATIC, and our MACH series where you buy FLIGHTSTICK PRO.

FLIGHTSTICK PRO is the ultimate combat stick for total command of the skies. Made to endure the toughest missions, FLIGHTSTICK PRO gives you the winning edge to take on even the worst enemy. With top gun precision, you can view your surroundings, activate radar, blast missiles, thrust into mach speed . . . all at your fingertips. FLIGHTSTICK PRO includes a four-way switch to control weapons, radar, and viewing for more advanced games plus all the best features of FLIGHTSTICK. Great with flight simulation, auto racing, and any game that uses a joystick. For all IBM compatible computers.

FLIGHTSTICK PRO. The most intense joystick you'll ever fly.

Fly The Best!

CH
PRODUCTS
970 Park Center Drive • Vista, CA 92083 • Phone: 619 598-2518 • FAX: 619-598-2524

Circle Reader Service Number 167

TONY LA RUSSA BASEBALL II

Tony La Russa Baseball II includes just about every element of America's favorite pastime except for the seventh-inning stretch. You can play it as a statistical simulation, a full-fledged action game, or anything in between. One of the most complete baseball simulations available, Tony La Russa Baseball II is packed with over 15MB of graphics, sound, and statistical data.

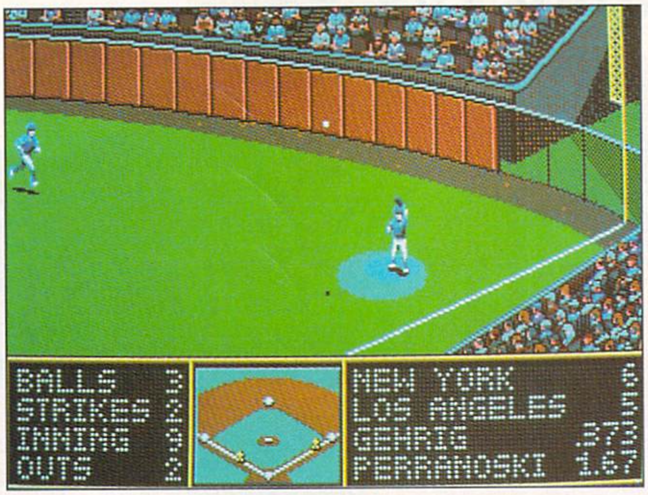
Like most state-of-the-art sports games, La Russa II lets you choose between a strategic or action game, with either the computer or you controlling the action. However, La Russa II also lets you assign certain tasks to the computer while keeping others for your control. For example, you can give the computer fielding, throwing, and running duties, so you need handle only the pitching and batting.

If you prefer a hands-on approach to managing a baseball team, you can create your own teams. Management capabilities include editing player statistics, transferring players between the active roster and the reserve list, setting the pitching rotation and batting order, making defensive assignments, and more. An important enhancement in La Russa II is the manager profile editor, which lets you assign a detailed managing style to the computer manager. The manager's style is divided into five strategy categories—Lineup & Rotation, Pitching, Batting, Defense, and Base Running—each of which contains several strategies which you can edit.

Whether you want to play a single game against a friend or compete against the computer for the pennant throughout an entire season, La Russa II delivers. You can even put together your ideal fantasy teams and leave the computer to figure out who'll win the World Series as your game statistics flash by and the outcome of each game is calculated. In less than 20 minutes, every pitch, hit, strikeout, and run in the season blazes through your computer's memory.

Adding to the simulation's realism are La Russa II's nicely rendered graphics and good use of digitized sounds. Throughout each game, you'll watch convincingly animated players race about the field, as well as hear the announcers comment intelligently on the plays. Tony La Russa Baseball II is the next-best thing to having a ballpark in your living room.

CLAYTON WALNUM



SSI's Tony La Russa Baseball II lets you assign certain tasks, such as fielding, throwing, and running duties, to the computer.

Strategic Simulations
(800) 245-4525
(408) 737-6800
$59.95

Circle Reader Service Number 454

KELLYREST

If you spend several hours each day at your computer, the thought of developing carpal tunnel syndrome, a widely known repetitive stress injury, can be frightening. An ergonomically designed workspace can greatly decrease your chances of getting this painful condition.

KellyRest, a cushioned wrist rest that slides right under your keyboard, has made typing much more comfortable for me. It extends about three inches out from the front of your keyboard to keep your hands and wrists at a comfortable position while working. The wrist pad is attached to a nonslip metal backing which sits under your keyboard and keeps the wrist pad from moving.

KellyRest acts as a buffer between my wrists and the edge of my desk, and it forces me to keep my hands and arms in a better position for preventing repetitive strain injuries. Although your wrists are supposed to stay elevated when you type, when you do lower them, it's much nicer to hit a Naugahyde pad than the hard wood edge of a desk.

KellyRest is effortless to install; just slide it out of the box and under the front edge of your keyboard. There's nothing to attach. Its quality construction is indicated by its four-pound weight. The standard model is 1 inch high, 3 inches deep, and 19 inches wide, and should accommodate a standard AT-style keyboard. Kelly can create custom configurations as well.

As a measure of prevention of the potentially painful reality of carpal tunnel syndrome, this wrist rest is of great comfort both mentally and physically. If you're looking for the peace of mind that comes with a healthy working environment, KellyRest is a good start.

POLLY CILLPAM

Kelly Computer Supplies
(800) 447-2929
$39

Circle Reader Service Number 455

LOST SECRET OF THE RAINFOREST

Vibrant graphics and sounds make Lost Secret of the Rainforest a highly entertaining product. And with the freedom to explore new worlds and develop creative solutions to problems, children should find this latest addition to the Sierra Discovery Series highly educational as well. Ecology *can* be fun.

As Adam Greene's adventure begins in Peru, both onscreen and manual directions help familiarize children with the program and advance them through the first stage. Adam learns that he's been chosen to save the South American rainforest and begins searching

USE THIS CARD TO REQUEST FREE INFORMATION ABOUT PRODUCTS ADVERTISED IN THIS ISSUE.

Clearly print or type your full name, address, and phone number. Circle numbers that correspond to the key numbers appearing on advertisements and in the Advertisers Index. Mail the postage-paid card today. Inquiries will be forwarded promptly to advertisers. Although every effort is made to ensure that only advertisers wishing to provide product information have reader service numbers, COMPUTE cannot be responsible if advertisers do not provide literature to readers.

CARDS VALID ONLY UNTIL EXPIRATION DATE.

This card is for product information only. Address editorial and customer service inquiries to COMPUTE, 324 W. Wendover Ave., Greensboro, NC 27408.

JOIN COMPUTE'S READER PANEL TODAY. Simply check "YES" to Question L (at right) and you'll be eligible to become one of a select group of readers who will participate in leading-edge market research.

COMPUTE'S FREE *PRODUCT INFORMATION SERVICE*

Name ______________________________

Address ______________________________

City ____________ State/Province ____________ ZIP ________

Country ____________________ Phone ____________________

A. What type computer(s) do you own? ☐ 486 PC 1 ☐ 386 PC 2 ☐ 386SX PC 3 ☐ 286 PC 4 ☐ Other IBM/PC Compatible 5 ☐ Laptop/Notebook 6

B. At home, do you use your computer mostly for ☐ Personal Finance 7 ☐ Work/Home Business 8 ☐ Entertainment 9 ☐ All of the Above 10

C. Would you classify yourself as a(n) ☐ Entrepreneur 11 ☐ Telecommuter 12 ☐ Moonlighter 13 ☐ Corporate Employee who brings work home 14

D. Which online service(s) do you use? ☐ CompuServe 15 ☐ GEnie 16 ☐ America Online 17 ☐ Prodigy 18

E. What other computer magazines do you subscribe to? ☐ PC/Computing 19 ☐ MPC World 20 ☐ Computer Gaming World 21 ☐ Home Office Computing 22 ☐ PC Magazine 23 ☐ PC World 24

F. Which Graphical User Interface do you use? ☐ Windows 25 ☐ GeoWorks 26 ☐ Other 27 ☐ None 28

G. Total time you spend reading COMPUTE? ☐ < 30 min 29 ☐ 30+ min 30 ☐ 60+ min 31 ☐ 90+ min 32

H. Do you regularly purchase hardware/software as a result of ads in COMPUTE? ☐ Yes 33

I. Do you own a ☐ CD-Rom Drive 34 ☐ Sound Card 35 ☐ Fax/Modem Board 36

J. What is your total household income? ☐ <$30,000 37 ☐ $30,000+ 38 ☐ $50,000+ 39 ☐ $75,000+ 40

K. What is your age? ☐ 18–24 41 ☐ 25–34 42 ☐ 35–49 43 ☐ 50+ 44

L. Would you like to join COMPUTE's Reader Panel? ☐ Yes 45

CIRCLE 101 for a one-year subscription to COMPUTE. You will be billed $14.97.

101	102	103	104	105	105	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	135	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230
231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250
251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310
311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330
331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350
351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370
371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390
391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410
411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430
431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450
451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470
471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490
491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510
511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530
531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550

5 Expiration 12-1-93

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 853 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTE Magazine
Reader Service Management Department
P.O. Box 5145
Pittsfield, MA 01203-9654

**USE
THIS
CARD
FOR
FREE
PRODUCT
INFORMATION**

Advertisers Index

Reader Service Number/Advertiser		Page
162	8-Bit	G-11
194	Abacus	71
169	Access Software	120,121
204	Advanced Gravis	35
	Adventure LearningWare	168
	AICS	164
	America OnLine	138
286	Amish Outlaw Shareware Co.	172
157	AMTEX Software Corporation	149
137	Automap Inc	76
	Bare Bones Software	174
152	Bear Technologies	G-17
	Best Personalized Books	169
173	Blue Valley Software	170
121	B.R. ROMS	172
181	Caloke Industries	G-21
118	Cell Micro	167
167	CH Products	153
175	Chips & Bits	161
174	Citizen American Corp.	IFC,1
139	CMD/Creative Micro Designs, Inc	G-10
251	Colorado Spectrum	17
209	Compaq	3,4,5,6,7,
150	CompSult	174
114	CompSult	G-11
227	Comptons New Media	81
108	CompuServe	32,33
	Computer Business Services	168
254	Computer Friends, Inc.	174
	Comtrad	162,163
125	Creative Labs	9
226	Crosley Software	170
144	CyberDreams	117
151	Davidson	41
106	Davidson	39
	Dechtar	148
161	Delphi	23
131	DemoSource	173
253	Disks O'Plenty	G-17
208	Disk-Count Software	157
136	Dr T's Music Software	130
192	Dr T's Music Software	131
	D&K Enterprises	169
112	Electronic Arts	101
196	Electronic Arts	52,53
165	Electronic Arts	124,125
134	Fantazia Concepts, Inc.	174
	FGM Connection	G-11
115	Free Spirit Software	158,159
228	Genovation Inc.	169
	GM Gold Master Card	IBC
110	Grapevine Group, The	G-5
140	Hi Tech Expressions	66,67
119	Hollyware Entertainment	135
117	Hollyware Entertainment	133
234	Horse Feathers Graphics	G-17
259	Humongous Entertainment	123
129	HyperLight Enterprises	170
	IBM	11
	IBM	55
300	ID SOFTWARE	147
206	Impressions	29
155	InLine Software	132
185	Interplay	151
231	Jackson Marking Products Co. Inc	168
160	JemmaSoft	166
	JP PBM Products by Mail	G-21
124	Kaltek	G-17
197	KF-PD Software	G-11
	Kid Secure of America	168
178	LACE	170
	Landmark Solutions, Inc.	167
164	Legacy Software	174
123	Logitech	31
255	Logitech	136,137
260	Mad Man Software	G-9
199	Mallard Software	51
158	Maxis	131
211	MicroLeague Sports	141
133	MicroProse	127
	Microsoft	62,63
289	MicroStorm Software	G-17
191	Needham's Electronics, Inc	171
	NRI/McGraw Hill	17i
	NRI/McGraw Hill	57
141	Odyssey OnLine	170
248	Origin	113
156	Pacific Microelectronics Inc.	166
168	Parsons Technology	25
107	Penthouse Modem	175
103	Penthouse OnLine	144
	Penthouse Photographer	140
250	PC Enterprises	174
153	Performance Peripherals, Inc.	G-21
207	Pixel Perfect	139
	PowerDisk	G-17
256	Profit Group, The	173
	Q Enterprises Software	G-17
241	Quadra Interactive	83
180	Radio Shack	18,19
138	Ramco Computer Supply	170
163	ReadySoft	145
135	Revell Monogram Inc.	85
212	SafeSoft Systems Inc	172
182	ScanRom Publications	166
183	School of Computer Training	168
111	School of PC Repair	168
	Sega	65i
120	Serif, Inc	15
116	SeXXy	172
171	Shareware Central	165,172
	Sierra OnLine Dynamix	89,90,91,92,93,94,95,96,97,98
148	Sierra OnLine	BC
	Sierra OnLine	73i
	Sign Up	166
109	Smart Luck Software	174
142	SMC/ Software of the Month Club	170
126	SoftShoppe	174
121	SoftVision International	160
210	Software Supoort International	172
190	Software Support International	G-7
	SOGWAP Software	G-9
145	SOMICH Enterprises	170
201	Spectrum Holobyte	44,45
154	Spirit of Discovery	47
203	Star Micronics	27
130	Starware Publishing Corp.	171
179	SubLogic	110,111
176	Tek-Shop	167
147	Thrustmaster	171
202	Tune 1000	87
193	Turtle Beach Systems	107
247	Turtle Beach Systems	107
242	Tycom Inc.	G-21
301	U.S. Robotics	61
127	Value Software Inc.	174
195	Virgin Games	74,75
132	Virgin Games	142,143
105	Virgin Games	129
189	Walnut Creek CDROM	165
172	Wedgwood Rental	172
128	Windows 900	173
	Product Mart	165,166,167,168,169,170,171,172,173,174
	Classifieds	175,176,177
104	COMPUTE Books	139,140,G-19

COMPUTE'S SharPak Disk Subscription	105
COMPUTE Ultimate Power Disk	59
Gazette Disk Index	G-21
Gazette Disk Subscription	G-9
Gazette Productivity Manager	G-23
Gazette Specialty Disk	G-15

CREDITS

Cover: Mark Wagoner; **page 10:** Rob Schuster; **page 13:** Ted Pitts/Scott Hull Associates; **pages 68–69:** Kee Hwa Jeun/Image Bank; **pages 77–78, 80, 82, 84, 86, 88, 99–100:** Rob Schuster; **page 102:** Mark Wagoner; **page 108:** Mark Wagoner; **pages 114–15:** Mark Wagoner; **page 199:** Richard Hawks; **page G-2:** © 1993 Keith LoBue/SIS.

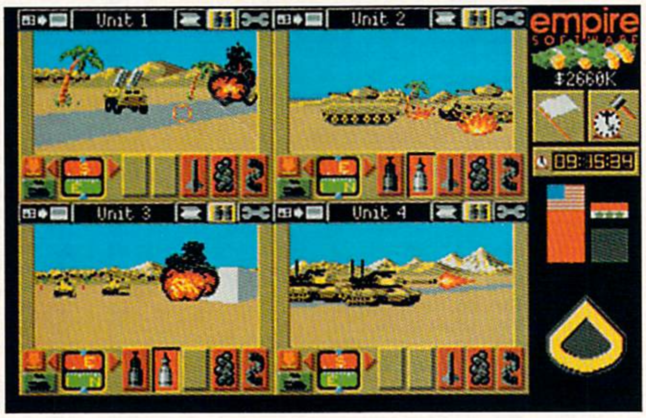
IMPORTANT NOTICE FOR COMPUTE DISK SUBSCRIBERS

COMPUTE offers two different disk products for PC readers: the SharePak disk and PC Disk. SharePak is monthly and has a subscription price of \$59.95 for 5¹/₄-inch disks and \$64.95 for 3¹/₂-inch disks. A subscription to SharePak does not include a subscription to the magazine. PC Disk appears in odd-numbered months and has a subscription price of \$49.95, which includes a subscription to COMPUTE. You can subscribe to either disk or to both, but a subscription to one does not include a subscription to the other.

for facts that could help stop its destruction. Your child must talk to people and animals, read their responses, and collect items that will help solve the forest's mysteries. The Ecorder, a hand-held computer, stores information about each animal and plant species, about ecological disasters that threaten the forest's existence, and about the history and way of life of South America's indigenous people. The Ecorder also allows your child to review the facts, take quizzes, and print the recorded information for reference.

Using the information collected with the Ecorder, your child finds ways to advance through each level. Because the game doesn't provide instructions for solving problems, your child must explore the area and use logic and imagination to solve the puzzles, which include saving an egg from a nest fire and getting past a swarm of insects. By encouraging creative thinking, Lost Secret of the Rainforest sets itself apart from other educational games. However, the lack of instructions can be challenging sometimes, since your child is stuck in a single setting until each problem is solved and the next path is revealed.

Lost Secret of the Rainforest uses 256-color VGA to create the detailed backdrops, which include tree canopies, caves with twisting tunnels, and a village of native people. Sierra also uses 16-bit audio to create background music, realistic voices, and the natural sounds of the rainforest. The package comes with both MS-DOS and enhanced Windows versions and can be operated using mouse, joystick, or keyboard.



You can control up to 16 tanks simultaneously in heavy battle with War in the Gulf's flexible quad-view interface.

Although the game targets children age 10 and older, young users may find some of the problems frustrating; however, the thrill of solving a difficult problem is rewarding and may encourage them to continue.

Sierra guarantees that your child will gain new information while playing Lost Secret of the Rainforest and provides a full refund if you aren't convinced of the program's learning value.

LISA YOUNG

Sierra On-Line
(800) 326-6654
$49.95

Circle Reader Service Number 456

WAR IN THE GULF

Kuwait, 1995. Saddam Hussein remains at the helm of Iraq's ship of state. Incidents between Israel and the Palestinians have raised the level of tension in the Middle East. Saddam believes the time is right to retake Kuwait.

This is the frighteningly believable scenario of one of the best battlefield simulators ever, War in the Gulf. Your assignment is to lead Team Kuwait, a crack team composed of American Desert Storm veterans hired by Kuwait's emir. You're commanding a tank assault to repel the invading Iraqi Republican Guard. Two Kuwait oil fields must be retaken, and the Iraqis must be pushed back across the border.

The emir has provided over $55 million to outfit Team Kuwait. Available weapons include the M-1 Abrams battle tank, the M-113 armored personnel carrier, the M-2 Bradley infantry fighting vehicle, and the M-901 TOW missile launcher. Each vehicle may be equipped with your choice of four different weapons: HEAT, SABOT, TOW, and SMOKE missiles.

You command 16 vehicles, which are divided between four platoons. A four-way split screen lets you see the battlefield from the perspective of each team. If the action gets too hot for one team, you can expand its view to full-screen so you can see more of what's going on. Thermal imaging makes night fighting possible, and you can call up an overhead map showing your forces and the Iraqi formations.

Controlling 16 tanks at once isn't easy, but who said war is simple? If you want to hone your battlefield strategy skills, War in the Gulf is worth a look. It is similar Empire tank games, such as Team Yankee, but it exhibits all the positive characteristics of a program that's been fine-tuned and perfected over time. My tanks to ReadySoft for importing this fun game.

BOB ELLER

Empire
Distributed by ReadySoft
(416) 731-4175
$49.95

Circle Reader Service Number 457

SPEAK UP!

Is there a hardware or software product
you'd like to see reviewed in COMPUTE?
Let us know by calling
(900) 884-8681, extension. 7010103.
The call will cost 95 cents per minute,
you must be 18 or older,
and you must use a touch-tone phone.
Sponsored by Pure Entertainment,
P.O. Box 186, Hollywood, California 90078.

DC

DISK-COUNT SOFTWARE

Lowest delivered prices with great customer service.

800-448-6658

READER'S CHOICE '91 COMPUTER

HOURS: M-F 9 AM- 8 PM SAT 10 AM- 3 PM EST

PRODUCT INFO & OTHER BUSINESS: 908-396-8880

1992 CM COMPUTER MONTHLY READER'S CHOICE

DISCOVER · American Express Card · MasterCard · VISA

NO SURCHARGE

SHIPPING IS ONLY $4.00 PER ORDER, NOT PER ITEM

HARDWARE INCLUDED!!!

C D ROM

Aesops Fables	33
Aircraft Encyclopda	45
Amer Bus. Phnbk.	39
Amer Hert Pict Dict	75
Arthur Teacher Trbl	41
Autodesk Explorer	119
Barney Bear Goes	
to School	26
into Space	26
Battlechess	34
Beauty & Beast	49
Beethoven Ninth	59
Berlitz Think & Talk	
French	105
Spanish	105
Bloodnet	41^{95}
Blue Force	39^{95}
Bookshelf	129
Britanica Family Chc	49
Buzz Aldrin Race	59
Carmen World Dlxe	65
Cautious Condor	45
C D Game Pack	55
C D Speedway	57
Chess Maniac	34^{95}
Christmas Carol	33
CIA World Fact	39
Clipart Goliath	30
Conan Cimerion	36
Creative Kids	36^{95}
Curse of Enchantia	25^{95}
Deathstar Arcade	30
Dictionaries & Lang	30
Dune	45^{95}
Education Master	32
Electronic Cookbk	75
Elect. Home Library	49
Elctrn Traveler:Calf	33
Encarta Encyclpd	249^{95}
European Monarchs	49
F-15	39^{95}
F-117A	43^{95}
Family Doctor	39
Fatty Bear	43^{95}
Font Master	39
G Force	19^{95}
Gateway II	35^{95}
Gettysburg:MM Hist	43
Gofer Winkles Adv	33
Golden Immortal	28
Great Cities Vol 1	49
Gunship 2000	37^{95}
Guy Spy	32
Humans	25^{95}
Inca	35^{95}
Inspector Ga•Aet	37^{95}
InteractiVe Old Test	52
Interactive Storytime	45
Intro Games Fr/Sp	79
Its a Wonderful Life	48
Jazz:Multimedia Hist	69
Jets & Props	55
Jones in Fast Lane	37
Just Grandma & Me	36
Jutland	44^{95}
Kings Quest 5	42
King Quest 6 Up	26^{95}
Land Of Lore	34^{95}
Languages of World	99
Learn to Speak Spn	59
Leisure Suit Larry	42
Libry of Art:Renaisn	65
Loom	39
Lost Treasure	49
MacMillian Child Dict	49
Manhole	49
Maniac Mansion	39^{95}
Mantis	45^{95}
Mario is Missing	47^{95}
Mavis Beacon	39
Mayo Clinic	49
Mixed Up Moth Gs	37
Monarch Notes	75
Monkey Island	39
MM Music: Mozart	33
MM Music: Vivaldi	33
Our Solar System	29
Pool Shark	19^{95}
Prcision Map	84^{95}
Protostar	39^{95}
Publishàil!	69
Reference Library	59
Return of Phantom	37^{95}
Rotor/Airball/Time	25
San Diego Zoo	49
Secret Weapons	59
Seventh Guest	59
Sherlock Holmes	39
Sherlock Holmes 2	42
Sherlock Holmes 3	49
Sleeping Beauty	37
Sound Works	35
Space Quest 4	37
Space Series-Apollo	49
Space Shu|tle	29^{95}
Spirit of Excalibur	37
Stellar 7	37
Strange Deadfellow	39
Star Trek Enhanced	49
Street Atlas	99
Talking Classic Tale	75
Talkng Jungle Safari	75
Time Table Science	59
Ultimate Shareware	59
U S Atlas	42
US Atlas w/Automap	49
US History	39
US Presidents	49
USA Wars:Civil War	49
USA Wars:Korea	49
USA Wars:Vietnam	49
USA Wars: WW II	49
Voyage Planet ea	69
Who Killd Sam Rup	25
Willy Beamish	37
Win CD	32
Wing Comm & Miss	45
Wing Com/Ultima 6	45
Wing Comm 2	57
W C 2/Ulti. Undrwld	57
World Atlas	42
World War II Pak	37^{95}
Adults Only-Must be21	
Animation Fantasy	65
PC Pix Vol 1 or 2	65
Porkware	65
Private Collection	65
Priv. Pictures 1 or 2	65
Seedy Vol 1-7 ea.	65
Storm 1 or 2	65
Visual Fantasy	65
Caddies 7.95ea. 3/$	19

SOFTWARE

A Train	39
Construction Set	22
Across the Rhine	47^{95}
Aces Over Europe	44^{95}
Aces of the Pacific	42^{95}
Mission Disk	19^{95}
AD&D Collect 2	42^{95}
AD&D Starter Kit	42^{95}
AD&D Unlimited	37^{95}
Adlbou&Junior #1	34^{95}
Air Bucks	34^{95}
Air Bus A320	45^{95}
Air Duel	33^{95}
Air Warrior SVGA	35^{95}
AJ World Discvry	29^{95}
AlgeBlaster Plus	30
Alone in The Dark	35^{95}
Alphabet Blocks	29^{95}
Amazon	38^{95}
Amazon Trail	34^{95}
Ambush	37^{95}
Ancient Art War Sky	35
Ancient Empires	30
Animal Adventure	47^{95}
Animation Studio	75
Arcade for Wind	29^{95}
Armored Fist	37^{95}
Ashes of Empire	35^{95}
A.T.A.C.	35
Auto Insight	49
Automap	44
Automap Wind	59
Automap Europe	74
Autoworks	39^{95}
B-17 Flying Fortress	19
Bailey's Bookhouse	29^{95}
Bane Cosmic Forge	36
Batman Returns	39^{95}
Battlechess 4000 SVGA	36
Battle of Destiny	35^{95}
Beat the House	29^{95}
Betrayal of Krondor	39^{95}
Betty Crocker Cook	Call
Black Crypt	31^{95}
Bloodnet	37^{95}
Blue & Gray	35^{95}
Blueforce	39^{95}
Body Illustrated	47^{95}
Bodyworks	42
Bug Bunny WrkShp	31
Buzz Aldrin	39^{95}
Caesar	35^{95}
Car and Driver	27^{95}
Carrier Strike	39
Expansion Disk	19^{95}
Carriers at War 2	42^{95}
Cash for Kids	31^{95}
Castle 2	35^{95}
Castle of Dr. Brain	30
Center Court Ten.	12^{95}
Challnge 5 Realm	33^{95}
Champions	35^{95}
Chemistry Works	38
Chessmaster	29^{95}
Children Writ & Publ	39
City Streets	59^{95}
Civilization	37
Civilization Deluxe	45^{95}
Civilization Win	41^{95}
Clash of Steel	39^{95}
Coaster	35^{95}
Cobra Mission	39^{95}
Comanche	42^{95}
Mission Disk	25^{95}
Comic Bk Creator	17
Compan of Xanth	35^{95}
Computer Works	46^{95}
Cohort 2	19^{95}
Conquest of Japan	35^{95}
Contraption Zak	25^{95}
Crusader Drk Savnt	39^{95}
Cuckoo Zoo	31^{95}
Cyber Space	34^{95}
Daemonsgate	35^{95}
Darklands	37^{95}
Darkseed	39
Darkside of Xeen	39^{95}
Dark Sun	47^{95}
Daughter of Serpnt	31^{95}
Deja Vu 1 & 2	37^{95}
Design your Railrd.	35
Diet Pro DOS/Win	25/36
Dino Park	35^{95}
Dino Quest	31^{95}
Dinosaur Adventure	34
Discovering Amer	35^{95}
Distant Sun	39^{95}
Dog Fight	37^{95}
Dr Floyd Desktop	19^{95}
Dr Jam Window	59^{95}
Dr. Quandry	31
Dragon Sphere	
Dragon Lair 3	39^{95}
Dreadnoughts	40^{95}
Dune 2	36
Dungeon Master	29^{95}
Dynamix Bundle	42
Eagle Eye Mystery	31^{95}
Eco-Quest 1 or 2	29^{95}
Eight Ball Delx	35^{95}
El Fish	35
Empire Deluxe	35^{95}
Entrmt Pak Win (ea.)	28
Eric the Unready	35^{95}
Eternam	35^{95}
Eye of Beholder	20
Eye Beholder 2	38
Eye of Beholder 3	42
EZ Cosmos	42
Ez Language Series	
Fr,Gr,It,Sp,Jp,Rs	31^{95}
F14 Fleet Defend	44^{95}
F 15 III	44
Master Edition	49^{95}
F117a Stealth	29^{95}
Falcon 3.0	45
Oper Fight Tiger	25
Mig 29 Data Disk	34^{95}
Family Tree Maker	42
Fantasy Empire	42^{95}
Farm Creativity Kit	18
Fatty Bear Birthday	31^{95}
Fields of Glory	33^{95}
Flashback	32^{95}
Flight Simul ATP	28^{95}
Flight Simulator 5	43^{95}
Air Trfc Cntrlr	34^{95}
Arcft/Scen Dsgn	28
Aircraft Adv Factry	25
# 685	17
# 701	17
Airport Facty Loc	17
California	37
East USA Scen	39^{95}
Great Britian	37
Hawaii	19
Instant Facit Loc.	19
Japan Scenery	19^{95}
New York	29^{95}
Paris	29^{95}
Pilots Pwer Tools	24^{95}
Rescue Air 911	17
San Fransisco	29^{95}
Scenery St A or B	37
Scenery Enhn Ed	25
Sound & Graphic	25
Tahiti	19
Washington DC	29^{95}
West USA Scnry	39^{95}
West Europe	19
Freddy Pharkas	39^{95}
Front Page Pro	45^{95}
Fun School:Fred Frog	
Sam Spy,Teddy Br	17
G-Force	19^{95}
Gateway II	35^{95}
Gearworks	29^{95}
Geekwad Games	22^{95}
Gobblins 1 or 2*	22
Grand Slam Bridg II	32
Great Naval Admrl	48^{95}
Super Ships	20^{95}
Great Works	30^{95}
Gunship 2000	29^{95}
Scenario Disk	24
Hardball 3	35
Data Disk (ea.)	17^{95}
Harrier Assault	34^{95}
Headline Harry	37
Health & Diet Pro	26
High Command	42^{95}
Hong Kong Mahjong	32
Hoyle Bk Game 1/3	30
Humans	25
Inca	34^{95}
Incredible Machine	29^{95}
Indiana Jones 4	37
Inspector Gadget	35^{95}
Island of Dr. Brain	29^{95}
Jetfighter 2	39
Adv Mission Disk	19
John Madden 2	31^{95}
Johnny Quest	29^{95}
Jump Jet	38^{95}
MPE Version	48^{95}
Kye Deluxe	30^{95}
Kid Cad	29^{95}
Kid Cuts	35^{95}
Kid Desk	25
Kid Pictures	19^{95}
Kid Pix	35^{95}
Kid Pix Companion	25
Kid Works 2	35^{95}
Kids Zoo	33^{95}
Kings Ransom	34^{95}
King's Quest 6	45
Land Of Lore	34^{95}
Legacy	39
Legacy Necromncr	19^{95}
Legion's of Krella	37
Lemmings	29^{95}
Lemmings 2	35^{95}
Lethal Weapon	35^{95}
Links	25
Links 386 Pro	39
Course Disk ea	16
386 Courses ea	19^{95}
Lord of Rings 2	37
Lost File Sherlock	27^{95}
Lost Treas Infocom	42
Lost Treasures 2	29^{95}
Lost Tribe	25
Lunar Command	35^{95}
Lost Vikings	29^{95}
Maelstom	39^{95}
Magic Candle 3	37^{95}
Maniac Mansion II	35^{95}
Mantis	39
Speech Disk	17
Mario is Missing	35^{95}
Mario Teach Type	25
Master of Orion	37^{95}
Math Blaster Plus	29^{95}
Mystery	29^{95}
Search of Spot	35^{95}
Math Blaster Wind	36
Math Rabbit	29^{95}
Mathology	29^{95}
Mavis Beacon	29^{95}
Mega Lo Mania	29^{95}
Mental Math Games	37
Michl Jordon Flght	37^{95}
Micro Cookbook 4.	31
Microsoft Golf	39
Midnight Rescue	35
Might & Magic 4	40
Might & Magc 5	39^{95}
Millies Math House	31
Mind Castle	35^{95}
Mixed-Up Fairy Tal	30
Mixed-Up Mother Gs	30
Money/Clocks Wrk	19
Monkey Island 1/2	23
Monopoly Deluxe	34
More Vegas Game	19^{95}
Mutanoid Challenge	31
Mystery at Museum	35^{95}
NFL Challenge	59
NFL Coaches Club	33
Nigel's World	31
No Greater Glory	20^{95}
Omar Shariff Bridge	37
Open Dialog	44^{95}
Operation Neptune	35
Orbits	29^{95}
Oregon Trail Delx	34^{95}
Origin FX	25
Out of This World	36
Outnumbered	30
Pacific Wars	47
Paladin 2	35
Patriot	24^{95}
PC Study Bible	42
Peppers Adventure	29^{95}
Perfect General	36
Pinball Dreams	29^{95}
Pirtate's Gold	38^{95}
Playroom 2.0	30^{95}
Police Quest 3	39^{95}
Pool Shark	19^{95}
Prince of Persia 2	39^{95}
Print Shop Deluxe	45
Graphic Coll. (ea)	30
Print Shop, New	35
Graphics (ea)	22
Print Shp Compion	31
Privateer	47^{95}
Prophecy	25^{95}
Protostar	39^{95}
Putt Putt Parade	32
Putt Putt Fun Pack	26
Quarter Pole	29^{95}
Quest for Glory 1	22
Quest for Glory 3	39
Rags to Riches	35^{95}
Reach for Skies	19^{95}
Reader Rabbit	35^{95}
Reader Rabbit 2	35^{95}
Ready for Letter	35^{95}
Ready Set Read	29^{95}
Reading Adv in Oz	36
Reading Comp	32
Ready Set Read	29^{95}
Realms of Arcadia	35^{95}
Red Baron	39
Mission Disk	17
Return Of Phantm	33^{95}
Rex Nebular	37
Ring World	34^{95}
Robosports Wind	25^{95}
Rock & Bach Studo	35^{95}
Rodney Fun Screen	31
Rome	29^{95}
Rule Engagment 2	39^{95}
Science Adventure	42
Scooter Magic Castl	32
Scrable Delx	32
Seal Team	37^{95}
Scrt Weapn Luftwf	29^{95}
Tour of Duty ea.	20
Seven Cities Gold	38
Shadow President	39^{95}
Shadowcaster	47^{95}
Shadowlands	29^{95}
Sierra Action Five	25
Sierra Award Winner	47
Sierra Family Fun	32
Sierra Starter Bndl	39^{95}
Silent Service 2	19^{95}
Sim Ant	34^{95}
Sim Ant French	35
Sim City Classic	25^{95}
Windows	25^{95}
Sim Earth	39^{95}
Sim Life Dos/Wind	39^{95}
Sing a Long Wind	31^{95}
Snap Dragon	32
Snoopy Game Club	29
Solitaire Window	29^{95}
Solitaires Journey	35
Space Ace 2:Borf	36
Space Adventure	42
Space Hulk	37^{95}
Space Quest 5	39^{95}
Spear of Destiny	39^{95}
Special Forces	29
Spectre	35^{95}
Spellbound	31
Spellcasting 301	35
Spell-it Plus	30
SpellJammer	37^{95}
Sports Adventure	33
Star Control 2	35^{95}
Star Trek 25th Aniv.	37
StarTrek AudioClip	34^{95}
Next Generation	38^{95}
StarTrek Screen Sav	37
Stickybr Math Tutor	30
Stickybr Pre-School	30
Stickybr Read Tutor	30
Stickybr Spell Tutor	30
Storybook Weaver	29^{95}
Strike Commander	45^{95}
Speech Disk	17
Strip Poker 3	32
Data Disk (ea)	17
Stronghold	37^{95}
Studyware for ACT	
GMAT,GRE,SAT	30
Studyware Biology,	
Calc.,Chem.,Econ.,	
Physics, Statistic	25
Studyware LSAT	37
Syndicate	37^{95}
Take a break X-Word	29
Pinball *	29^{95}
Task Force 1942	37^{95}
Admiral Edit	43^{95}
Terminator 2029	39^{95}
Tesserae	17^{95}
Trmntr 2 Cybrchess	35
Tetris Classic	31
Time Riders Amer.	35
Tony LaRussa Base.	17
Tony LaRussa II	37^{95}
Expansion Disk	19^{95}
Top Class Series ea	16
Tornado	45^{95}
Treasure Cove	35
Treasur Math Storm	35
Treasure Mountain	35
Treehouse	35
Tristan Pinball	29^{95}
Turbo Science	30
Turtle Tools	69
Ultima 7	47^{95}
Forge of Virtue	17
Silver Seed	19^{95}
Ultima 7 Part 2	47^{95}
Ultima Trilogy	37^{95}
Ultima Trilogy 2	47^{95}
Ultima Underworld	47^{95}
Part 2	47^{95}
Ultrabots	37^{95}
Uninvited Window	37^{95}
Unnecessry Rough	35^{95}
U.S. Atlas DOS	31
Utopia	29^{95}
V for Victory (ea)	42^{95}
Vista Pro	73^{95}
Vocabulary Devl	32
Wacky Funsters	19^{95}
War in Gulf	29^{95}
War in Russia	45^{95}
Warrior of Legend	19^{95}
Wayne Gretzky 3	35
Waynes World	29^{95}
What's My Angle	30
When2Worlds War	35^{95}
Where Crmn SanDiego	
America Past	34^{95}
Europe	30
Space	44^{95}
Time	30
USA	30
USA Deluxe	44^{95}
World Deluxe	44^{95}
Wild Science Arcad	35^{95}
Ween:Prophecy	34^{95}
Wing Comandr 2	47^{95}
Wing Com Acadm	31^{95}
World Circuit	34^{95}
MPE Edition	44^{95}
World Tour Tennis	32^{95}
World War II	35^{95}
X Wing	39^{95}
Mission Disk	19^{95}
Yobi Spelling Trick	29^{95}
Zodiac Signs	39^{95}
Zoo Keeper	36
Zug's Spelling Adv	22
Adv of Eco Island	22
Dinosaur World	22

Sound Cards

ATI Stereo F/X	139
StereoF/X CD	147^{95}
Covox Voice Blstr	64^{95}
Gravis Ultra Sound	129
CD-ROM Kit	298^{95}
Media Vision	
Audio Port	139
CDPC	959
CDPC XL	1159
Pro Audio 16	179^{95}
Pro Audio Studio	224^{95}
Pro 16 Multimedia	
Upgrade Kit 2	935
Pro Movie Audio	339^{95}
Logitech Audioport	134
Soundman	132^{95}
Sound Blaster	85
SB Midi Kit	59^{95}
Snd Blast Pro MCA	259
Sound Blaster Delx	132
SB Pro 16	164^{95}
SB Pro16 ASP	209^{95}
SB Discovery 16 I	459
SB Edutanmnt 16	549^{95}
SB CDROM Intrnl	369
SB Portblaster	149
SB Video Blaster	349
SB Video Spigot	419^{95}
SB Waveblaster	234^{95}
Roland RAP-10	459^{95}
SCC-1 GS	375
SC-7	315
SC-55	549^{95}
MA-12C ea	105
SPEAKERS	
CS-150 Shielded	28
CS-550 Shielded	35
w/3 band Equilizer	45
CS-1000	84^{95}
Altec Lansing 200	219
ACS 300	299

MIDI Interface

Midiator 101 Serial	95
PC Midi Card	79
2 Port SE	149^{95}
Hello Music	277^{95}
The Miracle	325

MIDI Software

Ballade Windows	79
Band in a Box	69
Cadenza	125
Cakewalk	95
Cakewalk Win	129^{95}
Cakewalk Pro	169
Cakewalk Win Pro	240
Encore	379
Jammer Pro	125
Laser Music Proces	79
Master Tracks Pro	249
MCS Stereo	55
Midiscan	269^{95}
Midisoft Studio	159
Music Bytes Vol 1	65
Music Mentor	79
Music Printer Plus	419
Music Time	169
Piano Works	99
Quick Score Deluxe	99
Songwright 5	89^{95}
Trax for Windows	60

CD DRIVES

Toshiba	
3041 Internal	489^{95}
3041 External	594^{95}
Texcel America	
3021 Internal	349
3024 Dbl Spd	390
3024 Business	679
3024 Education	604
3024 Home	569
3024 Multimeda	844
5024 Dbl Spd	495
5024 Business	769
5024 Education	729
5024 Multimed	969

Modem & Fax

US Robotic Sportster	
2400 Int.	99^{95}
14.4 v.42bs	162^{95}
- w/ S/R Fax	183^{95}
14.4 v.42bis Ext	183^{95}
w/ S/R Fax	213^{95}

Joysticks

CH Flightstick	37^{95}
CH Game Card 3	31
CH Mach 3	28^{95}
CH Virtual Pilot	65
Eliminator Card	26
Gravis Analog Pro	39
Gravis Joystick	32
Gravis PC GamePad	21
Kidz Mouse	30^{95}
Kraft KC3 Joystick	28
Maxx Flight Yoke	69
Maxx Pedal	39
Quickshot Game Cd	14
Quickshot Warrior	18
Suncom Command	19^{95}
Thrustmaster	
FCS	69
FCS Pro	109
Game Card	29^{95}
Weapons 2	95^{95}
Rudder Pedal	109
UPROM Chip	29^{95}

Multimedia

Aitech	
Audio Show	369
Pro 256	280
Pro Color Plus	529
ProVGA TV	459
Pro PC/TV Plus	249^{95}
Pro VGA/TV +	659
VideoSurge	659
VideoSurg SVHS	729
Wave Watcher	419
TV/GRX TV	269

Skins & Pads

Dust Covers	15
Grounded Wrist Strp	9
Keyboard Skins	15
Static Pads	
Large- System	15
Wrist Pads	8
Stax (Dust Repellent)	5
Statx Complete	
Cleaning System	15

Store: 1060 Randolph Ave. Rahway N.J.

TERMS AND CONDITIONS

Master Card, Visa, American Express & Discover Accepted. No Surcharge on Credit Cards. By mail: P.O. Box 3, Carteret, N.J. 07008. All Sales Are Final. NO REFUNDS! Exchange on defective merchandise with the same item only. No exceptions. All Products are new from manufacturer. All claims and guarantees are from the manufacturer. Call for current price and availability. GOVERMENT AND SCHOOL P.O.'s WELCOMED. For your protection, we will only ship to the address the credit card company has on file, therefore shipping to Ak., Hi., PR., P.O. Boxes, APO/FPO extra. International orders call for shipping charges. N.J. Resident add 6% sales tax. 20% restocking fee for all refused items.

Circle Reader Service Number 208

Free Spirit Software

CD-ROM

1-800-638-5757

Mon - Fri: 8am - 9 pm Sat: 7:30 am - 7:30 pm Sun: 9 am - 7:30 pm EST

AMERICAN EXPRESS DISCOVER MasterCard VISA COD

International Orders: (317) 878-4738 FAX Orders: (317) 878-4751

Chestnut CD-ROM Price Riot!

$12

NEW TITLES

Complete Home and Office Legal Guide

The Legal Guide Team's
Complete Home and Office
Legal Guide
Includes:

From the authors of the BBS Legal Guide. Contains 500 legal forms, including: contracts letters, legal forms, commercial leases, residential leases, business legal "checklists", home legal "Checklists" (estate planning, wills). The disc also contains a large annotated law library including: Selected US Supreme Court Cases 1989-92, Internal Revenue Code; Uniform Commercial Code; Model Business Corp. Act; Modern Penal Act; Uniform Probate Code; Bankruptcy Code; Rules of Federal Procedure; Rules of Criminal Procedure; Rules of Appellate Procedure; Rules of Evidence, plus many more annotated laws.

Computer Reference Library

Computer Reference Library

Complete step-by-step software and hardware tutorials for most popular programs. An invaluable aid for novice and experience computer users. Includes tutorials for dBase III and IV, WordPerfect, Lotus 1-2-3, Microsoft Word, Windows 3.1, MS-DOS, Ventura Publisher, PC-Write, Clipper, plus many more popular software packages. Languages, such as C++, Turbo Pascal, and Basic are also covered, as are hardware subjects such as interrupts, conflicts, port configuration, system optimizing, networking, troubleshooting, and more. Shareware.

Gardening

A handbook for the home gardener! Includes garden planning, layout, landscaping, pest control, herbology, and planting instructions for just about everything. Hundreds of black and white clipart plus full color photos can be used for plant and flower identification and as clipart. Includes reference guides for organic gardening methods, xeriscaping, and composting. Shareware.

POPULAR FAVORITES

Bibles & Religion

All popular New & Old Testament versions, Talmud portions, Book of Mormon, concordances, study guides, membership/fundraising , commentaries, and newsletters. Includes many translations of the Old and New Testaments, including Greek. This disc covers Judaism, Christianity. Shareware.

Clipart Goliath

Over 11,000 images in PCX and TIF formats, plus some file in color-TIF/PCX, MAC, GIF. Files can be imported to PageMaker, Corel, Adobe Illustrator, First Publisher, Ventura, plus virtually every commercial desktop publishing program available.

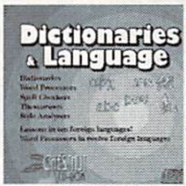
Complete Bookshop

An entire bookshop on a CD-ROM! Includes classics, poetry, humor, cookbooks, American history and founding documents, novels, short stories, home improvement guides, computer instruction guides, and lots more! Shareware.

Deathstar Arcade Battles

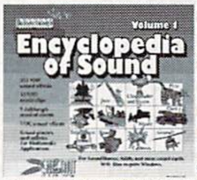
The best collection of exciting arcade games all on one CD! Space wars, shoot-em-ups, auto racing, sports, casino gambling, and more! Shareware.

Dictionaries & Languages



A giant compilation of dictionaries, thesauruses, word processors, style/syntax checkers, glossaries, lessons in French, German, Italian, Hebrew, Russian, Czech, Greek, Japanese, Spanish, Cantonese and MORE! Includes many humorous glossaries, crossword solvers, cryptogram solvers, industry-specific spell-checkers, plus the latest versions of the top shareware word processors. Shareware.

Encyclopedia of Sound



Produced by the The Music Factory, The Encyclopedia of Sound contains 250 sound files, including sound effects, voices, music clips, and full length original musical scores which may be used royalty-free for a wide variety of applications. The files are supplied in Windows' WAV format, and are (DDD) digitally recorded, mastered, and duplicated in full-range stereo. Also includes a large number of sound utilities.

HAM Radio

An enormous collection of HAM and SWL programs and data! Includes packet radio, satellite communications, frequency lists, equipment service/design/mods, logging, news, SSTV, FAX, FCC regulations, exams, plus more. This disk is for HAMs, Shortwave Listeners (SWL), Communications Engineers and students, and electronics hobbyists. Shareware.

Our Solar System

Our Solar System

Exciting observatory, NASA, USSR, European Space Agency, and Japanese and photos of the planets, moons, comets, earth, other galaxies, and other celestial phenomena! Includes star locators, planetarium programs, astronomical data, voyage simulators, NASA news releases, plus tons more! Shareware.

Shareware Overload

Packed with over 6100 programs (550mb) all compressed for all applications, with an emphasis on Games and Windows. Subjects include Business, Clipart, Communications - BBS, Database, Education, Finance, Games (lots of 'em), Graphics, Misc applications, Programmers' Tools, Religion, Sound, Utilities, Windows-based programs, and Word Processors. Shareware.

Sound Sensations

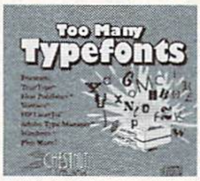
Sound Sensations!

Adds multimedia excitement your system! Includes tons of sound effects, full length musical scores, format conversion utilities, multimedia software, music files, jukeboxes, voices, sound clips, music voices in a variety of file formats! Supports MIDI, SoundBlaster, Adlib, Covox, Disney, Roland, plus many others cards and devices. Shareware.

TechnoTools

A programmer's dream disc! Routines, utilities, debuggers, troubleshooters and other programmers tools for C/C++, dBase, Clipper, Basic, Assembly, AI, Unix, Xenix, OS/2, Pascal, Ada, Fortran, Cobol, Btrieve, APL, Lisp, Forth, and more! Shareware.

Too Many Typefonts

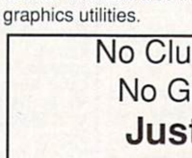


514 TrueType fonts; 393 ATM (Adobe Type 1) fonts, plus other typefonts in all formats. The disc also includes typeface modifiers, font managers and uploaders, translators, and tons of printer utilities for Postscript, DMP, HPLJ printers. Shareware.

Windoware

An excellent disc packed with tons of useful programs: typefonts, font installers, games, home business, education, wallpaper, icons, utilities, system optimizers, and more! For Win 3.1 +up. Shareware.

World Traveler Vol. 1



Photographers Michael McGrath and Paul Elmendorf have combined their extensive collections for a breathtaking multimedia slide show. The high resolution images which may be used royalty-free for a wide variety of applications. The files are supplied in PCX and GIF format, and are fully digitized and color corrected. The multimedia user-interface is simple and easy to use. The disc also includes a large number of graphics utilities.

No Clubs to Join!
No Gimmicks!
Just LOW,
LOW Prices!

Order with Check, Money Order, VISA, MasterCard, American Express, or COD. Order by phone, mail, or fax. Note: there is no surcharge for credit card orders. For the contiguous U. S., CD-ROM software shipping is $5.00 per order (not title); or $9.50 if COD. Alaska, Hawaii, Puerto Rico, Mexico and Canada add $8.00 per CD-ROM software order for shipping. Costs for shipping hardware, or, orders to foreign countries not mentioned, are quoted at time of order. Indiana residents please add 5% sales tax. Not responsible for typographical errors. Please research your product purchases as all sales are final. All products are covered by manufacturer's warranty. Prices and availability are subject to change without notice.

Free Spirit Software, Inc. Free Spirit Software, Inc. - PO Box 158 - 109 W Pearl Street - Trafalgar, IN 46181Questions? Phone (317) 878-5348

Circle Reader Service Number 115

Free Spirit

CD-ROM Software

1-800-638-5757

Mon - Fri: 8am - 9 pm Sat: 7:30 am - 7:30 pm Sun: 9 am - 7:30 pm EST

AMERICAN EXPRESS · DISCOVER · MasterCard · VISA · COD

International Orders: (317) 878-4738 FAX Orders: (317) 878-4751

Chestnut CD-ROMS your choice $15 each

Bibles & Religion - New & Old Testaments, study guides, covers Judaism, Christianity, Islam
Clipart Goliath - Thousands of images for all uses, in PCX & TIFF format! For DTP programs
Encyclopedia of Sound - Over 250 sound files by the Music Factory in WAV format
Complete Bookshop - An entire bookshop. Includes: classics, poetry, humor, history, more!
Deathstar Arcade Battles - Exciting VGA space wars, shoot-em-ups, sports, & more
Dictionaries & Language - Dictionaries, thesaurus, word proc, style/spell checkers, foreign languages
HAM Radio v3.0 - Packet radio, satellite, freq lists, service, mods, SSTV, FCC regs, exams, more!
Our Solar System - Exciting NASA photos & planetarium programs, star/planet locators
Shareware Overload! - 600MB, all kinds of applications, ZIPPED! Lots of Windows progs, & games
Sound Sensations! - Sound Effects, voices, music, utils, for AdLib & SounBlaster, & other cards
TechnoTools - C/C++, Basic, dBase, networking, Unix, OS/2, Windows, assembly, Pascal, more!
Too Many Typefonts - Countless typefonts in ATM, TrueType, Ghostscript, HP Laser, and more.
Windoware - Utilities, wallpaper, education, icons, font installers, games, and more for Windows.
World Traveler - Photos by Michael McGrath & Paul Elmendorf in PCX and GIF format

NEW! Chesnut CD-ROM Titles

Legal Guide - 500 legal forms form the authors of BBS Legal Guide
Gardening - Handbook for the home gardener with layout, planting instructions, etc.
Computer Reference Library - Step-by-step hardware and software tutorials.

CD-ROM Hardware

CD-ROM Drives	
BackPack CD (Transportable)	389.00
Mitsumi CD-ROM HH Internal	169.00
Texel DM3024 (drive only)	359.00
Toshiba XM-3401B (drive only)	399.00
Sound Boards	
Pro Audio Spectrum 16	179.00
Sound Blaster Deluxe	99.00
Soundblaster 16 ASP	219.00

CD Caddies

Sony Type

$5.00

CD ROM Multimedia

Magazine Information on latest CD-ROM releases

$3.00

$639	Sony CDU-561 + MediaVision PAS16SCSI + Speakers + 1 Software Bundle
$629	Teac CD-50 + MediaVision PAS16SCSI + Speakers + 1 Software Bundle
$529	Texel DM3024 + MediaVision PAS16SCSI + Speakers + 1 Software Bundle
$499	LMSI 206 + MediaVision PAS16LM + Speakers + 1 Software Bundle

CD-Format : Audio-Combined, Mode 1 & 2 Data Discs, CD-Audio Discs, CD-ROM XA (pictures).
Audio compatibility: MPC and MS Windows with MultiMedia, AdLib, Sound Blaster, & Real Sound.

Software for Bundles Above (Please order by number)

1. MPC Software Toolworks Encyclopedia (Grolier's), MPC US Atlas, MPC World Atlas, MPC The Animals!, MPC Guiness Book Of World Records (1993)

OR

2. MPC Software Toolworks Encyclopedia (Grolier's), MPC US Atlas, MPC World Atlas, MPC The Animals!, Reference Library

OR

3. MPC Software Toolworks Encyclopedia (Grolier's), MPC US Atlas, MPC World Atlas, MPC Mavis Beacon Teaches Typing, MPC ChessMaster 3000

OR

4. The Secrets of Monkey Island (5 Languages), Sport's Best(3 games, 4 languages), MPC Wizard, CICA Windows Programs & Utilities, Jets and Props, World View

OR

5. The Secrets of Monkey Island (5 Languages), Sport's Best(3 games, 4 languages), Languages Of the World (Windows), CICA Windows Programs & Utilities, Kodak Photo CD Access (Windows)

Need more descriptions? Call for our latest catalog.

Over 700 CD-ROM Software Titles in Stock!

Business	
American Business Ph Bk	29.00
Autodesk Explorer	**69.00**
Britannica Select Software	**19.00**
Business Library V1	**45.00**
Business Master	19.00
CD Lists Southern California	**59.00**
Essential Home & Bus Coll	**33.00**
Home Office Software	**30.00**
Lotus 123 CD-ROM	**89.00**
Mavis Beacon Teaches Typing	25.00
Microsoft Works	**45.00**
My Advncd Label Designer	**39.00**
North American Fax Book	29.00
Pro Phone 1992	29.00
Pro Phone 1993	99.00
Pro Phone Business 1993	**49.00**
Q&A	49.00
Secrets Executive Success	**29.00**
Clipart & Graphics	
Action	**29.00**
Animation Magic	**57.00**
Apollo (Space Series:)	33.00
Audubon Birds	25.00
Audubon Mammals	25.00
CD Cad 3.7	**25.00**
Clipart Galore	25.00
Clipart Goliath	15.00
Clipart Heaven	25.00
Clipmaster Pro	30.00
Color Magic	**19.00**
Corel Art Show III	39.00
Deep Voyage	**35.00**
Desktop Pub Dream Disk	29.00
Fantazia Fonts & Sounds	**29.00**
Font Funhouse	33.00
Fractunes	**29.00**
GIFs Galore	15.00
Home Designer DOS/WIN	**29.00**
Hot News Animations	**29.00**
Jets & Props	29.00
Just Fonts	19.00
Key Fonts Pro	29.00
Kodak Photo CD Access	25.00
Made in the USA	**29.00**
Mega Clip CD	19.00
MPC Wizard	14.00
Mother of All Clip Art	15.00
Publishers Paradise	25.00
Publish it 2.0 (DOS)	19.00
Publish it 3.0 (Win)	59.00
Quicktoons	**35.00**
Reel Clips	**33.00**
Renaissance Masters 1	29.00
Renaissance Masters 2	29.00
Resource Library Graphics	19.00
SFX	19.00
So Much Screenware	29.00

Space, Time & Art	69.00
Video for Windows	**35.00**
View from Earth	59.00
Visions of Saturn	19.00
VGA Spectrum 1	15.00
VGA Spectrum 2	19.00
World of Trains	29.00
Educational	
Animals, The	19.00
Barney Bear School	19.00
Barney Bear Space	19.00
Barron's Book Notes	**39.00**
Berlitz Think & Talk French	105.00
Berlitz Think & Talk German	109.00
Berlitz Think & Talk Italian	109.00
Berlitz Think & Talk Spanish	104.00
Britannica Family Choice	21.00
Carmen San Diego	25.00
Compton's Family Choice	29.00
Dinosaurs	**79.00**
Education Master	15.00
Electricity & Magnetism	**39.00**
European Monarchs	29.00
Kid's Can Read:	
Aesop's Fables	
Cinderella	
Heather Hits Her 1st Home Run	
Long Hard Day At The Ranch	
Moving Gives Me A Stomach Ache	
Mud Puddle	
Paperbag Princess	
Scary Poems For Rotten Kids	
Tale Of Benjamin Bunny	
Tale Of Peter Rabitt	
Thomas' Snowsuit	
Your Choice 25.00 each	
Learn Speak Spanish	59.00
Learning At Home	**29.00**
Let's Play	**25.00**
Mastering Math	59.00
Macmillan Dctnary for Children	39.00
Monarch Notes	57.00
Multimedia Computer Tutor	19.00
Nat Geog Mammals	25.00
Playing w/ Language English	29.00
Playing w/ Language French	29.00
Playing / Language Japanese	29.00
Playing w/ Language Spanish	29.00
Vocabulearn Spanish	45.00
Entertainment	
Arthur's Teacher Trouble	29.00
Battle Chess	25.00
Chess Maniac Nat Lampoon	45.00
Chessmaster 3000	25.00
DUNE in stock	49.00

Eye of the Beholder 3	49.00
Fly & Drive Spectacular	**45.00**
Four Queens Comptr Casino	39.00
Game Arena	**15.00**
Game Pack II	25.00
Games 1993	**25.00**
Games for DOS	**15.00**
Gameware Collection	**19.00**
House of Games	19.00
Hyper Backgammon	29.00
Indiana Jones Fate Atlantis	**45.00**
Jokes & Pranks	15.00
Just Games	19.00
King's Quest 5	23.00
Lasersoft Top Tracks	**49.00**
Leader Board Collection	**25.00**
Loom	25.00
Lost Treasures Infocom V1	**49.00**
Lost Treasures Infocom V2	**49.00**
Mantis	19.00
PC SIG World of Games	15.00
Pentomino	25.00
Private Eye Mysteries	45.00
Putt Putt Joins the Parade	55.00
Ringworld	56.00
Sci-Fi Fantasy	23.00
Secret \ Luftwaffe	25.00
Secret Monkey Island	25.00
Seventh Guest	49.00
Sherlock Cons 1	25.00
Sherlock Cons 2	47.00
Sherlock Cons 3	59.00
Space Quest IV	19.00
Triple Tris Challenge	33.00
Whacky Funster	25.00
Willy Beamish	19.00
Wing CMDR 2\Sec Missions	55.00
Literature	
Aesops Fables	30.00
Complete Bookshop	15.00
Classic Collection	59.00
Desktop Bookshelf	15.00
Hound of Baskervilles	39.00
Interactive Storytime V1	29.00
Interactive Storytime V2	35.00
Interactive Storytime V3	**33.00**
Just Grandma & Me	36.00
Kaa's Hunting	35.00
Magazine Rack	29.00
Mixed Up M Goose	19.00
Mogli's Brothers	35.00
Old Testament	69.00
World Lib Classic Book Coll	49.00
Miscellaneous	
1001 Utilities	15.00
Caddies	5.00
CD Speedway	57.00
Classic Collection	69.00

Jewel Cases	1.00
Lightning	69.00
Nautilus Bac Pac V1	39.00
Nautilus Bac Pac V2	39.00
Nautilus Mini Subscription	27.00
Romware Magazine	15.00
PC Medic	19.00
Up All Night	19.00
Music & Sound	
Encyclopedia of Sound	15.00
Killer Trak CD	19.00
MIDI Connection	49.00
MIDI Music Shop	19.00
Resource Library Audio	19.00
Sights & Sounds	25.00
Sound Effects Library	27.00
Sound Library	25.00
Win CD	29.00
Programming	
Authorware Star	33.00
C Source Users Lib	25.00
IBM Library for AIX	9.00
IBM Network Softcopy Coll	9.00
LAN Master	25.00
MS-DOS Collection	15.00
Power Tools for DOS	15.00
Power Tools for Windows	15.00
Programmers ROM	29.00
Simtel 20	15.00
Source C CD	19.00
X11R5\GNU	25.00
Reference	
Aircraft Encyclopedia	25.00
Bible Library	35.00
CD-ROM Deluxe Pack	29.00
Cinemania	59.00
Compton Upgrade & Switch	89.00
Consumer Information	19.00
Dict Living World	39.00
Encyc Win 1.0, S.T.	47.00
Family Doctor	23.00
Food Analyst	39.00
Guiness 1992	15.00
Guines 1993	27.00
Health & Medical Directory	109.00
History of the World	59.00
Holy Bible & Christian Shware	19.00
Home Remedies	33.00
JS New Prague Cookbook	25.00
King James Bible	19.00
Languages of World	29.00
M S Bookshelf 93	55.00
Mayo Clinic	25.00
Microsoft Encarta	249.00
M/M Animals Encyclopedia	45.00
Murmurs of Earth	45.00
Oxford English Ref Lib	99.00
Plant Doctor	27.00

Prescript. Drugs	29.00
Reference Lib, S.T.	25.00
Return to the Moon	33.00
Total Baseball 1993	43.00
USA State Factbook	29.00
Shareware	
All American Shw galore	19.00
Amsoft World Ham Radio V2	29.00
Between Heaven & Hell	35.00
California Collection	15.00
CICA Windows	15.00
Cream of the Crop	29.00
Hacker Chronicles	25.00
Hall of Fame	15.00
Ham Call April 1993	47.00
Libris Britannica	45.00
M/M Shw Explosion	19.00
Minerva III	19.00
Monster Media '93	29.00
Night Owl 9	25.00
Orig Shwre '92	15.00
PC SIG 12	29.00
Phoenix 3.0	15.00
Phoenix Phun & Games	25.00
QRZ Ham Radio	19.00
Shareware '93	25.00
Shwre Extravaganza (4 disks)	39.00
Shareware Gold 2	19.00
Shareware Heaven	19.00
Shareware Magic	39.00
Shareware Perlen 2	29.00
Shareware Studio 2	20.00
Software Vault 2	15.00
Super CD	19.00
Super CD 2	29.00
Top 2000+ Shwre	25.00
Ultimate Games Collection	15.00
Ultimate Shwre Coll	30.00
Wild Cat Gold	45.00
Window Master	19.00
Windows 1993	25.00
Winware #3	25.00
Wizpack	19.00
Travel	
Global Explorer	89.00
Great Cities V1	25.00
Great Wonders World V1	35.00
Hong Kong At Its Best	19.00
Hospitality Index	29.00
National Parks	29.00
New York at its Best	19.00
PC Globe	49.00
Street Atlas USA	89.00
US Atlas w Automap	29.00
World Atlas 3.2	19.00
World Atlas Mario is Missing	25.00
World Atlas US Atlas Combo	27.00
World Vista	49.00

Adults (over 21 ONLY)	
101 Sexual Positions V1	39.00
101 Sexual Positions V2	39.00
Adult Ref Library	25.00
Adventure of Buttman	49.00
After Dark Trilogy	35.00
All Beauties	29.00
Animation Fantasies 1	33.00
Animation Fantasies 2	29.00
Asian Ladies	29.00
Best of Vivid	39.00
Busty Babes	29.00
Busting Out (Vivid Digital)	39.00
Cafe Flesh	33.00
Deep Throat	39.00
Digital Dreams	25.00
Dirty Talk	39.00
Ecstasy	29.00
Erotic Encounters	30.00
Exotic Girls	25.00
Foxes	25.00
Giffy Gold	33.00
Girls of Vivid V1	33.00
Girls of Vivid V2	33.00
Hidden Obsessions	45.00
Hot Pix 2	30.00
Hot Pix 3	30.00
Hot Pix 4	30.00
House of Sleeping Beauties	35.00
Island Girls	15.00
Legend of Kama Sutra	39.00
Local Girls	15.00
Lovely Ladies II	30.00
Moving Fantasies	29.00
My Private Collec 1	33.00
My Private Collec 2	33.00
Nightwatch	49.00
PC Pix 1	33.00
PC Pix 2	33.00
Physical Therapy	19.00
Porkware 1	30.00
Porkware 2	30.00
Priv Pict I	30.00
Rimfire Pacific Video Clipart	39.00
Seedy Movies	33.00
Seventh Heaven	33.00
Smutware	25.00
Southern Beauties	43.00
Stareware	29.00
Storm I	30.00
Storm II	30.00
Storm III	30.00
Swimwear 1993	25.00
Visual Fantasies	29.00
Volcano	29.00
Wicked	39.00
Women of Venus	29.00
Proof of age required	

Order with Check, Money Order, VISA, MasterCard, American Express, or COD. Order by phone, mail, or fax. Note: there is no surcharge for credit card orders. For the contiguous U. S., CD-ROM software shipping is $5.00 per order (not title); or $9.50 if COD. Alaska, Hawaii, Puerto Rico, Mexico and Canada add $8.00 per CD-ROM software order for shipping. Costs for shipping hardware, or, orders to foreign countries not mentioned, are quoted at time of order. Indiana residents please add 5% sales tax. Not responsible for typographical errors. Please research your product purchases as all sales are final. All products are covered by manufacturer's warranty. Prices and availability are subject to change without notice.

Free Spirit Software, Inc. Free Spirit Software, Inc. - PO Box 158 - 109 W Pearl Street - Trafalgar, IN 46181Questions? Phone (317) 878-5348

Circle Reader Service Number 115

Learn Your Software In Two Hours. . . Guaranteed!

OUR CERTIFIED INSTRUCTORS TEACH YOU THE POWERFUL FEATURES OF YOUR SOFTWARE THROUGH THE ADVANTAGES OF VIDEO TRAINING. TRY ANY OF SOFTVISION'S EASY-TO-FOLLOW VIDEOS AT NO RISK UNDER THE TERMS ON OUR **UNCONDITIONAL 30-DAY MONEY-BACK GUARANTEE**. CALL, MAIL OR FAX YOUR ORDER TODAY.

SoftVision.
INTERNATIONAL, L.C.
1240 East 800 North
Orem, Utah 84057 U.S.A.
FAX: (801) 225-8559

TO ORDER CALL
1-800-S-4-VISION
(1-800-748-4746)
Canada: 1-800-563-1069
U.K.: 0793 849996

Visa, MasterCard, AMEX, Money Orders, Purchase Orders, and checks accepted. Please indicate video title, quantity, special offer if applicable, shipping/ billing address, and phone number. All orders processed same day as received. Add $6 for single tape orders, $12 for multiple (up to 4) tape orders for shipping and handling. Utah residents add 6.25% sales tax.

WordPerfect is a registered trademark of WordPerfect Corporation.

NEW

WORDPERFECT SIX.0 *(2 hrs. ea.)*
1-Introducing 2-Intermediate
3-Advanced 4-Tips and Tricks
5-5.1 to 6.0 update
Any 4 tapes–$199.95 or Single Tape–$69.95

WORDPERFECT 5.2/WINDOWS *(2 hrs. ea.)*
1-Introducing 2-Intermediate
3-Advanced 4-Tips and Tricks
All 4 tapes–$199.95 or Single Tape–$69.95

WORDPERFECT 4.0 FOR OFFICE *(2 hrs. ea.)*
1-Introducing 2-Intermediate
3-Advanced 4-Tips and Tricks
All 4 tapes–$199.95 or Single Tape–$69.95

WORDPERFECT 5.1 OR 5.0/DOS *(2 hrs. ea.)*
1-Introducing 2-Intermediate
3-Advanced 4-Tips and Tricks
All 4 tapes–$169.95 or Single Tape–$49.95

WORDPERFECT FOR VMS *(2 hrs. ea.)*
1-Introducing 2-Intermediate
3-Advanced 4-Tips and Tricks
All 4 tapes–$749.95 or Single Tape–$199.95

WORDPERFECT FOR MAC *(2 hrs. ea.)*
1-Introducing 2-Intermediate 3-Advanced
All 3 tapes–$119.95 or Single Tape–$49.95

AN INTRODUCTION TO DOS 6.0 *(90 min. ea.)*
1-Part One 2-Part Two 3-Part Three
All 3 tapes–$149.95 or Single Tape–$69.95

MICROSOFT WINDOWS *(90 min. ea.)*
1-Part One 2-Part Two 3-Part Three
All 3 tapes–$149.95 or Single Tape–$69.95

UNIX TUTORIAL DISKETTE [3.5"] $99.95

UNIX SYSTEMS ADMINISTRATION AND TROUBLE SHOOTING DISK [3.5"] $99.95

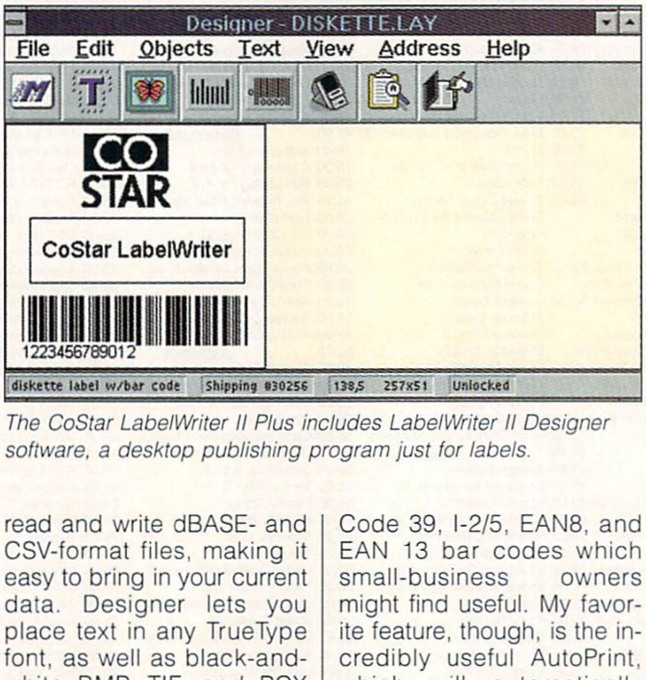
WORKBOOKS FOR VIDEO TRAINING
Please call for available titles.

Circle Reader Service Number 166

LABELWRITER II PLUS

If you're tired of feeding labels into your printer or (shudder) typewriter, you'll find relief in CoStar's LabelWriter II Plus.

This cute little label printer attaches to your system's serial port (leaving your parallel port free for your full-size printer). It uses thermal printing technology to print labels up to 2.44 inches wide at 138 dpi. (CoStar's less-expensive LabelWriter II limits print width to 1.22 inches but is otherwise identical.)



The CoStar LabelWriter II Plus includes LabelWriter II Designer software, a desktop publishing program just for labels.

The bundled DOS and Windows software makes the LabelWriter II Plus a pleasure to use. I did most of my design work with the Windows version, which includes an address book, a list book (a minidatabase for nonaddress-type label entries), and Designer, a miniature desktop publishing program just for labels. The address and list books can read and write dBASE- and CSV-format files, making it easy to bring in your current data. Designer lets you place text in any TrueType font, as well as black-and-white BMP, TIF, and PCX graphics, on your labels. Even at 138 dpi, the labels look very professional and jaggy-free. The LabelWriter II Plus will print U.S. Postal Service Postnet bar codes, as well as the standard Code 39, I-2/5, EAN8, and EAN 13 bar codes which small-business owners might find useful. My favorite feature, though, is the incredibly useful AutoPrint, which will automatically print an address label when you print a letter from Word for Windows, Ami Pro, or WordPerfect for Windows. You can also print an address from the clipboard.

The DOS software has similar capabilities and can also automatically print addresses from your printer output. Although the program, which installs as a TSR, is quite powerful, you'll probably prefer the graphical version if you have Windows.

You'll find that standard address labels (in yellow or white, or clear), larger shipping labels, labels for 3½-inch disks, and labels for the tops and spines of VHS videotapes are readily available at most office-supply or computer stores. The thermal labels are reasonably priced, ranging from just under two cents to about five cents apiece; this is much less expensive than most laser-printer labels. The LabelWriter II Plus pays for itself many times over in the convenience it provides.

DENNY ATKIN

CoStar
(203) 661-9700
LabelWriter II Plus—$299.95
LabelWriter II—$249.95

Circle Reader Service Number 458 ❐

CHIPS & BITS inc.

IBM MAC & AMIGA GAMES FOR LESS

Shipping to US,PR,AK,HI,APO & FPO $4 per order. Air Mail to Canada $6 per order. Handling $1 per shipment.
2 Business Day Air US $6 per order; PR, HI $12 1st item + $2 ea. add'l; AK $19 1st item + $2 ea. add'l. Handling $1 per shipment.
Europe, S. America Air Mail $19 1st item + $6 ea. add'l. Asia, Australia, Africa, Air Mail $25 1st item + $6 ea. add'l. Handling $1 per shipment.

PO Box 234
Rochester, VT 05767
Call 800–699–4263
Int'l 802–767–3033
Fax 802–767–3382

IBM HARDWARE

AdLib Sound Card	$34
Adlib Gold Sound Card	$99
Adv Gravis Ultrasound	$129
Flight Stick Joystick	$36
Flight Stick Pro Joystick	$59
Maxx Cobra Flightstick	$54
Media Concept	$59
Pilot Control Stand	$20
Pro Audio Spectrum 16	$159
Sound Blaster Deluxe	$89
Snd Blaster Pro Deluxe	$129
Sound Blaster 16 ASP	$219
SBlaster Discovery 8	$399
SBlaster Discovery 16	$469
SBlaster Edutainmnt 8	$448
SBlaster Edutainmnt 16	$519
Sound Galaxy BX2	$65
Sound Galaxy NX2	$79
Sound Galaxy NXPRO	$119
Snd Galaxy NXPRO 16	$169
Snd Galaxy Multimedia	$399
Snd Galaxy 16 MMedia	$499
Sound Machine	$94
Thrustmaster FCS	$59
Thrustmaster FCS Pro	$99
Thrustmaster Game Card	$27
Thrustmaster Rudder CS	$99
Thrustmaster WCS II	$99
Voice Blaster	$64

IBM CD ROM

12 Roads Gettsyburg	$48
7th Guest	$54
7th Guest 2:11th Hour	$65
Aegis: Guardian of Fleet	$54
Airworks Music Library	$34
Alone in the Dark	$48
Americans in Space	$41
B17 Flying Fortress	$42
Blue Force: Next of Kin	$44
Buzz Aldrin Race Space	$59
Castles 2	$50
Curse of Enchantia	$26
Cyber Space	$38
Day of the Tentacle	$45
Discoveries of the Deep	$37
Dracula	$48
Dracula Unleashed	$51
Dragon's Lair	$36
EcoQuest	$42
Eric The Unready	$36
Eye of the Beholder 3	$48
F15 Strike Eagle 2	$44
Fantasy Empires	$36
Gobliiins 1 or 2	$30
Gunship 2000	$44
Guy Spy Terror Deep	$36
Hell Cab	$52
Inca	$42
Indy Jones Fate Altantis	$52
Iron Helix	$60
Japanese Alive	$118
Jersey Devil	$34
Jutland	$52
King's Quest 6	$48
Labyrinth	$39
Laura Bow 2	$42
Lord of the Rings	$38
Lost in Time	$42
Microcosm	$51
Myst	$64
Omar Sharif on Bridge	$46
Oshkosk '92	$39
Phantasmagoria	$59
Rebel Asault	$44
Return of the Phantom	$42
Shadow of the Comet	$48
Sherlock Holmes 3	$51
Sim Ant	$48
Sim City	$48
Sim Earth	$48
Slater & Charlie	$42
Star Trek 25 Anniversary	$46
Stronghold	$36
Ultima Underworld 1 & 2	$52
Under a Killing Moon	$48

IBM ADVENTURE

Alone in the Dark 1 or 2	$36
Amazon	$29
Amazon Trail	$32
Batman Returns	$32
Beverly Hillbillies	$30
Blue Force: Next of Kin	$42
Castle Wolfenstein	$37
Day of the Tentacle	$39
Discoveries of the Deep	$37
Dragon Knight 3	$49
Dragon's Sphere	$42
Dreamweb	$36
Epic	$32
Eric the Unready	$32
Flashback	$29
Gateway 2:Homeworld	$34
Hired Guns	$32
Homey D. Clown	$27
Inca 2	$42
Indy Jones Fate Atlantis	$36
King's Quest 6 VGA	$42
King's Ransom	$38
Leisure Suit Larry 6	$42
Nebulas	$27
Out of this World	$36
Pepper Adventure Time	$29
Police Quest 4	$42
Prince of Persia 2	$45
Return of the Phantom	$39
Return to Zork	$46
Riftwar Legacy VGA	$37
Ringworld	$36
Sam & Max Hit the Road	$38
Secret of 7th Labyrinth	$42
Shadow Caster	$52
Shadowgate WIN	$34
Space Quest 5 VGA	$34
Spellcasting 301	$34
Star Trek:Judgment Rite	$38
Starship	$38
Surf Ninjas	$37
Under a Killing Moon	$43
Where Amrica Past CSD	$37
Where in Europe CSD	$29
Where in Space CSD Dlx	$44
Where in Time CSD	$32
Where in USA CSD Dlx	$45
Where in USA is CSD	$29
Where in USA CSD Dlx	$49
Where in World CSD	$32
Where in World CSD Dlx	$52
Yserbius	$24

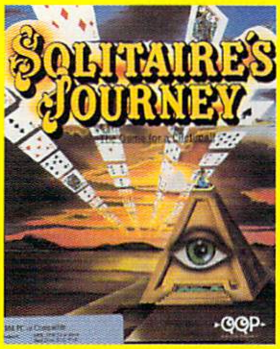
IBM ROLE PLAYING

Black Crypt	$32
Celtic Legends	$32
Challenge of 5 Realms	$44
Champions	$37
Cobra Mission	$49
Companion of Xanth	$36
Dark Sun	$52
Dark Sun Grey Isle	$34
Darklands	$39
Daughter of Serpents	$19
Dungeon Master 2	$39
Elvira 2 Jaws Cerberus	$19
Eye of the Beholder 3	$46
Legacy: Realm Of Terror	$38
Legend	$31
Legend of Valor	$39
Legends of Drakka	$38
Loremaster	$29
Lost Tribe	$29
Lure of the Temptress	$37
Magic Candle 3	$19
MegaTraveller 3	$39
Metal and Lace	$49
Might & Magic 3	$24
Might & Magic 4	$36
Might & Magic 5	$42
Pirates Gold	$42
Protostar	$39
Quest for Glory 3 or 4	$42
Realms of Arkania	$37
Red Crystal	$38
Rome: Pathway to Power	$32

'MIGHT & MAGIC: WORLD OF XEEN' Experience the latest multi-media technology on CD-ROM. This jam packed CD contains 2 intro sequences, 3-D animation, 256 color VGA graphics, three game endings, and much more. **$42**

MEGATECH
METAL & LACE
THE BATTLE OF THE ROBO BABES

'METAL & LACE' The gorgeous Robo Babes are expecting you. They'll give you a welcome you won't soon forget. Strapped in Robo armor and loaded with special weapons, the Robo Babes will have you gripping your joystick and wiggling the gimbal all night long. Metal & Lace contains violence and sexy graphics. **$49**



'SOLITAIRE'S JOURNEY' is a complete solitaire program. Choose from 105 of the world's most popular solitaire games. Play in tournaments or create your own. Keeps a complete statistical history and overall averages for each player. 4 intriguing quests are included and several different play levels. **$36**

UNTRY CLUB
Skip
Grid
Profile
3 Shots: 5
SWING
Address
Draw
Straight
Fade
Chip

'LINKS 386 PRO' offers **SUPER VGA** graphics and advanced features designed for your 386 or 486. New features include computer opponents, a save game option that allows your friends to play against you in an existing game. Play at Harbour Town or use any of the Links or Links Pro add on course disks for more fun. **$32**

Visa & MC Accepted. CODs $6. Checks Held 4 Weeks. Money Orders Treated as Cash. Most Items Shipped Same Day. Shipping times not guaranteed. Check compatibility before you buy. Defectives replaced with same product. Price & availability subject to change. All Sales Final.

Circle Reader Service Number 175

IBM ROLE PLAYING

Star Trek:Next Genertion	$46
Stonekeep	$52
Stronghold	$39
Ultima 7 Black Gate	$48
Ultima 7 Forge of Virtue	$18
Ultima 7.5 Serpent Isle	$48
Ultima 7.5 Pt 2 Slvr Seed	$18
Ultima Underworld	$19
Ultima Underworld 2	$46
Unlimited Adventures	$38
Veil of Darkness	$37
Wizardry 6	$34
Wizardry 7 Crusaders	$42

IBM SIMULATION

A10 Avenger 1993	$46
A320 Airbus	$44
AH-64 Helicopter	$46
Aces Over Europe	$42
Aces Europe Miss 1 or 2	$27
Aces of the Pacific	$42
Aces Pacific Miss Disk	$27
Aces of the Deep	$42
Armoured Fist	$52
Attack Pack	$42
B17 Flying Fortress	$39
Coaster	$32
Delta V	$48
F117A Stealth Fighter	$42
F15 Strike Eagle III	$42
Falcon 3.0	$48
Falcon 3 Scen1	$24
Falcon 3 Scen 2 Mig 29	$33
Fleet Defender	$48
Great Naval Battles	$44
Great Nav Bat Amrica Atl	$21
Great Nav Bat Supr Ship	$19
Great Nav Bat Scn Build	$28
Harrier Assault SVGA	$48
Indy Car Racing	$48
Iron Helix	$49
Jump Jet	$39
Maximum OverKill	$44
Max Overkill Miss 1or2	$28
Mechwarrior 2	$42
Microsoft Flight Sim 5.0	$49
Pacific Strike	$52
Privateer	$52
Sailing Simulator 3	$42
Seal Team	$42
Strike Commander	$48
Syndicate	$39
Tie Fighter	$48
Ultrabots Sanction Earth	$39
Voice Commandr F117A	$18
Voice Cmmandr F15SE3	$18
Wing Commander	$19
W C Secret Mission 1&2	$20
Wing Commander 2	$48
W C 2 Operation 1 or 2	$22
W C 2 Speech Mod	$13
Wing Commander Acad	$42
World Circuit	$32
X-Wing	$40
X-Wing Mission Disk 1	$20

IBM ADULT

Adult Reference CD	$24
Adv of Brad Stallion CD	$39
Busty Babes CD	$32
Ecstacy CD	$32
Femme Fatale	$26
Fmme Fatale DD 1-3 Ea	$18
Jigsaw Pinups	$19
Lovely Ladies CD	$39
My Private Collection CD	$39
PC-Pix CD	$39
Planet of Lust	$12
Sex Olympics	$12
Sex Vixens from Space	$12
Strip Poker 3	$31
Strip Poker 3 DD 1-6 Ea.	$19
Strip Poker Professional	$33
Strip Pokr Pro DD 1-6 Ea	$16

IBM SPORTS

D.Robinson NBA Action	$44
Front Page Football	$39
Front Page Football Pro	$42
Hardball 3	$34
Joe Montana Football 2	$42
Links Pro 386 Golf	$32
Links Pro Course 1 or 2	$19
Links Pro Course 3-6 Ea	$20
Microsoft Golf Windows	$39
NFL Challenge Premium	$59
NFL Coaches Club LTD	$48
NFL Football	$31
NHLPA 94 Hockey	$39
Tony La Russa 2	$36
W. Gretzky Hockey 3	$36
W. Gretsky Leag Sim 2	$29
Wilson Pro Staff Golf	$23
World Class Soccer	$28

IBM BUNDLES

ADD Collector's Ed 2	$46
ADD Starter Kit	$29
Air Combat Classic	$45
Allied Forces	$9
Combat Classics	$24
Eye Beholder Collection	$52
Land Sea Air Trilogy	$12
Land Sea Air Trilogy 2	$29
Leisure Suit Larry Bundle	$39
Lost Treasures Infocom	$39
Lost Treas Infocom CD	$39
Lost Treasure Infocom 2	$29
Lost Treas Infocom 2 CD	$29
Marvel Trilogy	$12
Megafortress Mega-Pak	$38
Power Hits: Battletech	$32
Power Hits: Movies	$17
Power Hits: Movies	$19
Power Hits: Sci Fi	$19
Power Hits: Sports	$19
Sierra Adventure Bundle	$39
Sierra Family Fun Pak	$29
Space Quest Bundle	$36
Space Quest Bundle	$42
Ultima Bundle 1-6 CD	$59
Ultima Trilogy	$39
Ultima Trilogy 2	$48
Wing Commander Dlx	$48
Wing Commandr Dlx CD	$48
Wizardry Trilogy	$32

IBM STRATEGY

A Train	$34
Breach 3	$36
Buzz Aldrin Race Space	$39
Campaign 2	$36
Capitalist Pig WIN	$19
Carriers at War 2	$49
Castles 2	$36
Civilization	$32
Clash of Steel	$42
Conquer for Windows	$39
Conquered Kingdoms	$36
Conq Kingdoms Scen 1	$25
Dominion:One King Life	$41
Dune 2	$44
Empire Deluxe	$35
Empire Deluxe Scen 1	$21
Empire Deluxe WIN	$35
Epic Dwarven Tale	$38
Harpoon 2	$52
Lemmings 2: The Tribes	$32
Lost Admiral Enhanced	$44
OutPost WIN	$42
Pacific Theater Ops	$42
Perfect General 2	$44
Rags to Riches	$36
Railroad Tycoon 2	$39
Red Zone	$32
Rules of Engagement 2	$38
Sid Meir's Civil War	$58
Sim City 2000	$43
Simfarm	$41
Tegel's Mercenaries 2	$44

NOV COM 1

TECHNOLOGY UPDATE

900 MHz breakthrough!

New technology launches wireless speaker revolution. . .

Recoton develops breakthrough technology which transmits stereo sound through walls, ceilings and floors up to 150 feet.

Breakthrough wireless speaker design blankets your home with music.

By Charles Anton

If you had to name just one new product "the most innovative of the year," what would you choose? Well, at the recent *International Consumer Electronics Show,* critics gave Recoton's new wireless stereo speaker system the *Design and Engineering Award* for being the "most innovative and outstanding new product."

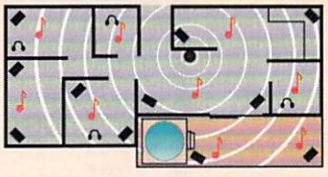
Recoton was able to introduce this whole new generation of powerful wireless speakers due to the advent of 900 MHz technology. This newly approved breakthrough enables Recoton's wireless speakers to rival the sound of expensive wired speakers.

Recently approved technology. In June of 1989, the *Federal Communications Commission* allocated a band of radio frequencies stretching from 902 to 928 MHz for wireless, in-home product applications. Recoton, one of the world's leading wireless speaker manufacturers, took advantage of the FCC ruling by creating and introducing a new speaker system that utilizes the recently approved frequency band to transmit clearer, stronger stereo signals throughout your home.

150 foot range through walls!

Recoton gives you the freedom to listen to music wherever you want. Your music is no longer limited to the room your stereo is in. With the wireless headphones you can listen to your TV, stereo or CD player while you move freely between rooms, exercise or do other activities. And unlike infrared headphones, you don't have to be in a line-of-sight with the transmitter, giving you a full 150 foot range.

The headphones and speakers have their own built-in receiver, so no wires are needed between you and your stereo. One transmitter operates an unlimited number of speakers and headphones.



Recoton's transmitter sends music through walls to wireless speakers over a 75,000 square foot area.

Crisp sound throughout your home. Just imagine being able to listen to your stereo, TV, VCR or CD player in any room of your home without having to run miles of speaker wire. Plus, you'll never have to worry about range because the new 900 MHz technology allows stereo signals to travel over distances of 150 feet or more through walls, ceilings and floors without losing sound quality.

One transmitter, unlimited receivers. The powerful transmitter plugs into a headphone, audio-out or tape-out jack on your stereo or TV component, transmitting music wirelessly to your speakers or headphones. The speakers plug into an outlet. The one transmitter can broadcast to an unlimited number of stereo speakers and headphones. And since each speaker contains its own built in receiver/amplifier, there are no wires running from the stereo to the speakers.

Full dynamic range. The speaker, mounted in a bookshelf-sized acoustically constructed cabinet, provides a two-way bass reflex design for individual bass boost control. Full dynamic range is achieved by the use of a 2" tweeter and 4" woofer. Plus, automatic digital lock-in tuning guarantees optimum reception and eliminates drift. The new technology provides static-free, interference-free sound in virtually any environment. These speakers are also self-amplified; they can't be blown out no matter what your stereo's wattage.

Stereo or hi-fi, you decide. These speakers have the option of either stereo or hi-fi sound. You can use two speakers, one set on right channel and the other on left, for full stereo separation. Or, if you just want an extra speaker in another room, set it on mono and listen to both channels on one speaker. Mono combines both left and right channels for hi-fi sound. This option lets you put a pair of speakers in the den and get full stereo separation or put one speaker in the kitchen and get complete hi-fi sound.

These wireless stereo headphones have a built-in receiver.

Factory direct savings. Because of our commitment to quality and our factory direct pricing, we sell more wireless speakers than anyone! For this reason, you can get these speakers far below retail with our 90 day *"Dare to Compare"* money-back guarantee and full manufacturer's warranty. Through this limited time offer, the Recoton transmitter is only $69. It will operate an unlimited number of wireless speakers priced at only $89 and wireless headphones at $59 each. So take advantage of this special offer to fill your home with music. Your order will be processed in 72 hours.

AWARD WINNING WIRELESS SPEAKER

Built-in receiver and amplifier:

The wireless speaker and headphones both contain a built-in receiver and amplifier. Signals are picked up and transmitted as far as 150 feet away through walls without the use of wires.

Volume
Power
Tuning
Tuned ports
2" tweeter
4" woofer
Individual left, right & mono switch and Individual bass boost control (on back)

Size: 9"H x 6"W x 5.5"L
Signal-to-noise ratio: 60 dB
Channel Separation: 30 dB
Two-way bass reflex design
10 watts/channel RMS amps
Frequency Response: 50 Hz-15 KHz

Don't take our word for it. Try it yourself. We're so sure you'll love the new award-winning Recoton wireless speaker system that we offer you the **Dare to Compare Speaker Challenge.** Compare Recoton's rich sound quality to that of any $200 wired speaker. If you're not completely convinced that these wireless speakers offer the same outstanding sound quality as wired speakers, simply return them within 90 days for a full "No Questions Asked" refund.

RECOTON CORP
1992
International
Summer
Consumer
Electronics
Show
Design and Engineering Award

Recoton's Design and Engineering Award

Recoton Transmitter	**$69**	$4 S&H
Wireless products compatible with the Recoton transmitter:		
Recoton Wireless Speaker	**$89**	$6 S&H
Recoton Wireless Headphones	**$59**	$4 S&H

Please mention promotional code **161-CU1111.**

For fastest service call toll-free 24 hours a day

800-992-2966

To order by mail send check or money order for the total amount including S&H (VA residents add 4.5% sales tax). Or charge it to your credit card by enclosing your account number and exp. date. Send to:

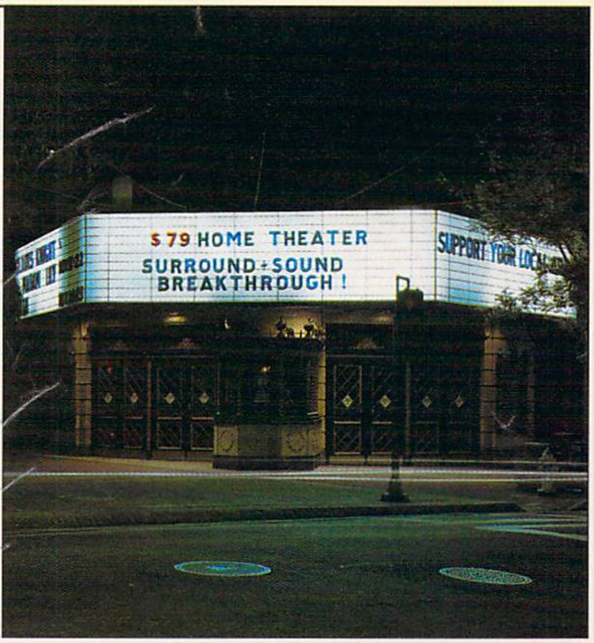
COMTRAD INDUSTRIES
2820 Waterford Lake Drive Suite 106
Midlothian, Virginia 23113

TECHNOLOGY UPDATE

How to get surround sound without buying the theater...

An amazing new surround sound decoder turns your existing stereo into a five channel home theater.

By Chuck Anton



As much as I love renting videos, it's just not the same as seeing a movie in a theater. I remember the first time I saw *Top Gun*. I nearly jumped out of my seat.when the planes flew overhead. One of the reasons movies seem so real is because they use surround sound to make it seem like you're actually there. Now, an incredible new device lets you use your stereo receiver to get that same surround sound in your home.

It takes more than just four speakers to get surround sound. You need to have some way of separating the signals. The new QD-1 Series II decoder does just that, and in a revolutionary way that rivals the best Dolby Pro-Logic and THX Systems available.

Wins over critics. Noted audio critic, Len Feldman, reviewed the QD-1 for the September issue of *Audio Magazine*. He concluded that "...the QD-1 produced a completely accurate and realistic surround sound experience from a variety of videotapes and laser discs with Dolby surround encoding... the QD-1 delivers home theater sound the way it was meant to be heard."

Breakthrough 'L minus R.' Back in the 1960's, Dynaco discovered that in addition to the right and left channels, a "difference" signal existed in a stereo recording, and aptly named it "L minus R." The QD-1 is able to decode Dolby Surround signals in a videotape or a laser disc because those spatial and depth cues have been matrixed into the "L minus R" portion of the stereo soundtrack. It does so passively, with no signal processing. What's more amazing, the QD-1 uses your main stereo amp to amplify the rear channels. You do not need any additional amplifiers!

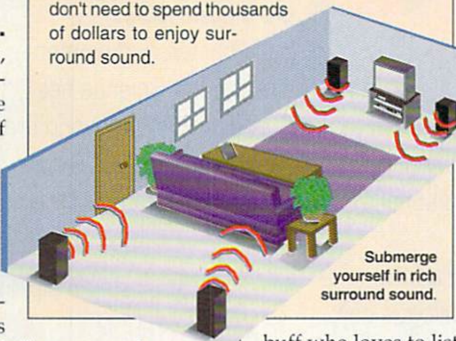
Concert hall sound. The QD-1 also decodes the ambience found in all musical recordings. This sense of space, or concert hall acoustics is present in all CDs and cassettes, especially live recordings. John Sunier of *Audiophile Edition*, a nationally syndicated radio program, says "If you're a surround sound buff who loves to listen to music, you'll find this $79 passive black box superior to even the $3000 THX or Dolby Pro-Logic processor."

The Secret of Surround Sound

Surround sound has become the rage of the '90's because it adds "depth" to stereo sound, giving you the home theater experience. Simply stated, it makes you feel like you're actually at a concert or a movie theater.

To "fill a room" with sound you need more than the two channels. And that's the beauty of the Dynaco QD-1, it provides five channels from *any* two channel stereo or TV.

Dynaco offers rear channel speakers specifically designed to integrate with the QD-1 decoder. You may also need our center channel speaker, the A10-V, if your two front speakers are more than eight feet apart. Adding this fifth speaker, or center channel, helps keep dialogue and important localization cues centered. So you don't need to spend thousands of dollars to enjoy surround sound.



Submerge yourself in rich surround sound.

Quick and easy installation. Hook up is easy. The QD-1 connects to the speaker outputs on your amp. The speaker leads then run to each of your four (or five) speakers. The rear channel speakers may be small; we recommend the AW-1s at $99 a pair. They come with mounting hardware, a keyhole slot for flush mounting, and have an attractive all-weather gun metal aluminum finish.

The AW-1 rear channel speakers *integrate perfectly with the QD-1.*

Factory direct offer. The QD-1 is so new you won't find it at your local department store. To introduce this product, we are offering it direct to you for a limited time special offer. By ordering now, you can save a substantial amount of money.

Risk-free home trial. Let's face it. The best way to evaluate surround sound is in your home, not in a showroom. That's why we're offering this risk-free home trial offer.

We're so sure you'll be delighted with the quality of these products and the surround sound experience that we are giving you 30 days to try them for yourself. If they're not everything we say, return them for a full refund.

QD-1 surround sound decoder........... **$79** $6 S&H

Speakers designed by Dynaco for the QD-1:

AW-1 *two* rear channel speakers .... **$99** $6 S&H
A-10V shielded center speaker........... **$59** $4 S&H

To receive this special pricing you must mention promotional code CU1110.

For fastest service call toll-free 24 hours a day

800-992-2966

VISA MasterCard DISCOVER AMERICAN EXPRESS

To order by mail send check or money order for the total amount including S&H (VA residents add 4.5% sales tax.) Or just charge it to your credit card, enclosing your account number and exp. date. Send to:

COMTRAD
INDUSTRIES
2820 Waterford Lake Drive Suite 106
Midlothian, Virginia 23113

THE PASSIVE ADVANTAGE

Passive. The QD-1 is *passive*, meaning it requires no AC current. It actually sounds better than active decoders, producing more clarity, more detail, no noise, a greater sense of space, and zero distortion. This superior passive system is a breakthrough unique to Dynaco.

Active. All Dolby Pro-Logic decoders (stand-alone or built-in units) are active. This means they decode and amplify the signal electronically. The active way induces noise and distortion, hindering the home theater experience. This is an example where "more is less." Spending thousands on an active system will not give you the performance of the QD-1.

Fatal Attraction
BACKDRAFT
dynaco
PRETTY WOMAN
CITY SLICKERS
PREDATOR 2

The QD-1 decoder *makes your movies come to life. Surround sound brings the theater experience home to you.*

Keys To Success

Take Control Of Your Future With A College Degree In Computer Science

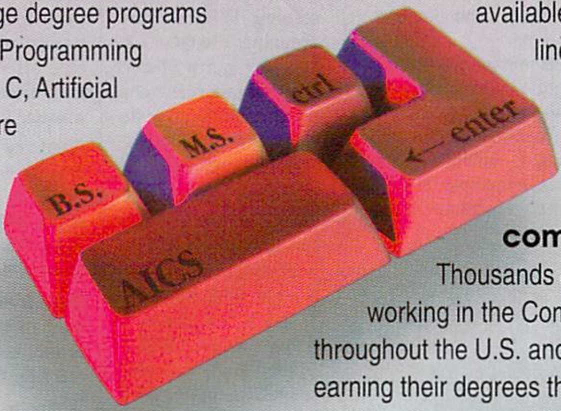
Now you can get the opportunity and earning power a college degree confers—without leaving home and without spending thousands of dollars.

The AICS home study program:

- B.S. and M.S. college degree programs
- In-depth courses in Programming Languages, Pascal, C, Artificial Intelligence, Software Engineering, Compiler Design, and much more.
- Approved Ada course available
- All courses through home study

Proven acceptance in business, industry, and government.

Many leading corporations have approved the AICS program for their employees. More than 75 employers have paid the tuition for their employees, including a number of Fortune 500 companies and government agencies.



AICS lowers the cost of a college degree without lowering the standards.

The academic program includes comprehensive courses using the same textbooks used in major universities. Qualified instructors are available on telephone help lines.

Join students from leading computer companies.

Thousands of men and women working in the Computer Science field throughout the U.S. and around the world are earning their degrees through the AICS non-traditional program. You can be one of them.

For a free
catalogue call:
1-800-767-AICS
Outside U.S.:
1-205-323-6191
Fax 1-205-328-2229
2101-CCF
Magnolia Avenue
Suite 200
Birmingham, AL 35205

AMERICAN
INSTITUTE
FOR
COMPUTER
SCIENCES

The leading edge of learning

© 1992 AICS

COMPUTE's Product Mart

is a special advertising section designed to benefit you, the PC direct marketer, by letting you advertise directly to the readers that buy. We offer:

- **Marketing Assistance**
  Each ad receives a complementary reader service number that generates a targeted sales lead mailing list.
- **Qualified Readers**
  Our readers search the Product Mart for quality hardware, software, and peripheral products they can *buy*.
- **Guaranteed Audience**
  Our rate base is guaranteed at 275,000 per issue, with an actual monthly circulation of over 300,000.
- **Cost Effectiveness**
  Ad sizes range from $1/9$ ($2\,1/8 \times 3$) to $2/3$ page, and you can request frequency rates of up to 12 times per year. B/W, 2/color and 4/color availability.

Space closing: The 15th of the third month preceding issue date (e.g. May issue closes February 15th). Space limited to a first-reserved, first-served basis.

For ad specifications
or more information call
Lucille Dennis
(707) 451-8209
Fax (707) 451-4269

Call now to reserve your space!

SHAREWARE'S TOP 50!

Special
$1.99 Disk
$1 Extra for 3.5"

Ask for our **FREE** Catalogue of over 5,500 programs in 90 categories!

936	MEDLIN ACCOUNTING Full featured
4535	FIRST INVOICE SYSTEM Simple!
764	EZ TALK Easy modem package
2400	- 3(3) RBBS BBS Package
4327	7 DAY COMPUTER COURSE
277	- 9(3) PC-FILE Version 6.05!
2733	AQUARIUM Fantastic graphics (EGA)
548	CITY DESK Desktop Publisher
2196	SKYGLOBE Desktop Planetarium
715	WORD PROCESSOR FOR KIDS
1931	GALAXY LITE Word Processor
977	SPELL CASTLE For all ages
2600	- 1(2) ADVENTURE GAME TOOL KIT
3159	WORD RESCUE From Apogee
4091	- 2(2) MATH RESCUE Ages 6 up
2158	KID GAMES 4 Ed. Games
882	RUSH HOUR! Control traffic lights
2719	FAIRY GODMOM! 50 Levels
112	MAH JONG Tile Game (EGA)
1031	HUGOS HOUSE OF HORRORS 3D (EGA)
3131	- 2(2) HUGO II Final Episode (EGA)
1122	ELECTRONIC MONOPOLY Fantastic (EGA)
1214	COMMANDER KEEN EGA Adventure
1240	BLACKJACK With tutor! (EGA)
1397	DARK AGES: PRINCE OF DESTINY (EGA)
1398	HUGO II: WHODUNIT? (EGA)
2373	DUKE NUKEM Stop Dr. Proton (EGA)
2501	KID PAINT Coloring Book (EGA)
2716	CHINESE CHECKERS (EGA)
2722	PAGANITZU From Apogee
3120	- 1 COMMANDER KEEN 3D Graphics (HD, EGA)
3827	KILOBLASTER Beautiful Graphics (EGA)
3931	- 3(3) CATACOMB ABYSS 3D Fantasy
3234	CORNCOB 3D Flight Simulation (EGA)
205	PC POOL Rack'em Up!
3310	- 1(2) WOLFSTEIN 3D (HD, VGA)
3357	JILL OF THE JUNGLE (HD, VGA)
3604	- 5(2) GALACTIX Save the earth! (HD, VGA)
4395	- 7(3) ZONE 66 Pilot your jet (HD, VGA)
1415	EZ TREE Family Tree
3841	HOME PLAN Draw your home
3997	PROTOCAD 3D CAD Program
1168	HARD AT WORK Fool the Boss!
8004	PAINTERS APPRENTICE Paint program
2479	PC-LOTTO! US/Canada lotteries
652	RESUME SHOP Get a job
869	XMAS CARD Computer greeting cards
8000	SHAREWARE TUTOR Learn to use Shareware
8001	TRIVIA CANADA Trivia game
8002	500 FREE THINGS FOR YOUR COMPUTER Posters, software, magazines, etc.

SHAREWARE Extravaganza!
25,000 programs on 4 CD Disks!
Special $89.00

**HD - Hard Drive Required*

Shipping - $5 Canada/US • $10 International
Ont. Residents add 8% PST, Canada Residents add 7% GST

ORDERS: **SHAREWARE CENTRAL**
P.O. Box 897
Wheatley, Ontario N0P 2P0
1-800-563-6647 • 1-519-825-9236
FAX 1-519-825-3780
VISA, Cheque or Money Order
Prices valid to December 31, 1993

*SHAREWARE programs require separate payment to author if found useful.

Circle Reader Service Number 171

Shareware to Meet Your Every Need

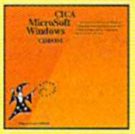
Libris Britannia CDROM

From the best British shareware library, over 600 megabytes of superb public domain and shareware for the IBM PC. This disc is biased towards the technical and scientific PC user and includes extensive sections on electronics, engineering, mathematics, medicine, statistics, ham radio and other specialist areas. Libris Britannia comes with a 124 page book describing each software package. Made in March 1993.......................................**$69.95***

Giga Games CDROM

This disc features an amazing collection of games, from classic arcade to the lastest windows simulations to educational games for all ages. Mah Jong Tile sets, sports games, trivia games, word games, war games, visual entertainment, BBS doors and more. A vast assortment of utilities and "cheat sheets" for commercial and shareware games is included. BBS ready. Made in June 1993...............................**$39.95***

CICA MS Windows CDROM



This disc contains a copy of CICA, the internet's largest Windows ftp site, with hundreds of megabytes of MS Windows programs. Includes all sorts of utilities, games, demos (for Windows programs), fonts and font viewing and design programs, source code, printer and monitor drivers, programming tools and a whole lot more! Updated quarterly, the current edition is new in April 1993. Yearly subscriptions available. BBS index files...................**$24.95***

Simtel MSDOS CDROM

Packed full of the world's highest quality MSDOS shareware — every DOS user should own this disk! Simtel contains something for everyone, with over 9,000 files. Our friendly shell program will help you find whatever you need, whether it be utilities, communications programs, BBS's, editors, documentation, databases, etc. BBS index files. Last quarterly update in May 1993. ....**$24.95***

CDROM Caddies $4.95

* Shareware programs require separate payment to authors if found useful.

AMEX/VISA/MC/COD

CALL OR SEND EMAIL TODAY!

1-800-786-9907
FAX 1-510-674-0821
info@cdrom.com

$5 S&H per order (in USA, Canada and Mexico) 1-510-674-0783
$10 overseas

All our disks are unconditionally guaranteed.

Walnut Creek CDROM
4041 Pike Lane, Suite D
Concord, CA 94520

Circle Reader Service Number 189

ScanRom Publications Presents
HOLLYWOOD: THE BIZARRE
THE LIVES AND DEATHS OF THE STARS

HOLLYWOOD is a world unto itself . . . . The glamour, the glitter, the pathos and the tragedy that often accompanies the stars and the players–the people you see on the screen and those unknown faces, hidden behind the camera's eye. The faces that are familiar to millions of moviegoers the world over–and the faces that elude fame for their entire lives–and those who have a passing acquaintanceship with stardom – and then disappear from public sight.

LEARN ALL ABOUT HOLLYWOOD'S LEGENDS and see them as never before. See the photographs that made them famous. Many from the private collections of Hollywood's photographers. Pictures you've never seen before.

Read from **THE HOLLYWOOD DEATH BOOK** by James Robert Parish, one of Hollywood's foremost authorities and chroniclers of the Hollywood scene. Learn about more than 5,000 Hollywood players and feast on biographies of hundreds of your favorite performers.

Listen to Marilyn Monroe singing "Happy Birthday Mr. President," hear James Dean and Natalie Wood and more of your favorites as they perform just for your listening pleasure on this disc which features more than 60 minutes of the voices of some of Hollywood's most legendary figures!

Just $69.95
(plus $5.00 S&H & tax where applicable)
Order From Dept. CPT
ScanRom Publications
Box 72 • Cedarhurst, NY 11516
or Call 800-269-2237
Fax 516-295-2240
Visa & MasterCard Accepted

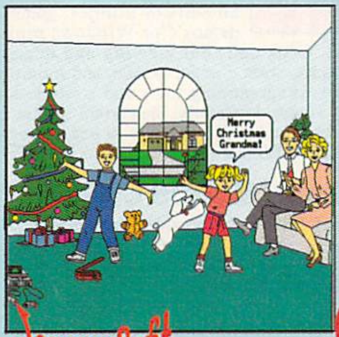
Circle Reader Service Number 182

Sign Up

Start your own Vinyl Sign Making Business for as little as $2995

- In-store or mobile locations
- No Experience
- Glass etching and Metal engraving equipment also available
- Start part-time from home

CALL TODAY!
1-214-248-9100
D & K Enterprises, Inc.
3216 Commander, Suite 101, Dept 27
Carrollton, Texas 75006


Merry Christmas Grandma!

JemmaSoft presents **CartoonMania**

CartoonMania is an easy to use software that lets you design and write your own cartoons. It contains a gallery of over 200 pieces of clip art from which you can choose sceneries, props and characters. The special graphics feature of CartoonMania enables the 16 characters to change facial expression and body posture. To add a dimensional look to your scene, arrange and re-size the characters and props. Finish off your piece of work by writing your own dialogue. This program allows you to print your art work or save it as a TIFF, BMP or PCX file.

CartoonMania offers an endless source of entertainment by stimulating the creative side of both children and adults. Younger kids get a kick out of arranging and coloring their art work, making their own story or coloring book. Teenagers and adults will enjoy designing unique letters, greetings, invitations and posters.

See your local retailer or call (904) 483-2934

Save $15 Buy direct for only $34.95 (List Price $49.95)
Plus $3.50 for shipping/handling FL resident add $2.30 sales tax

Send check/money order to: JemmaSoft 12505 Pine Glen Drive, Leesburg, FL 34788

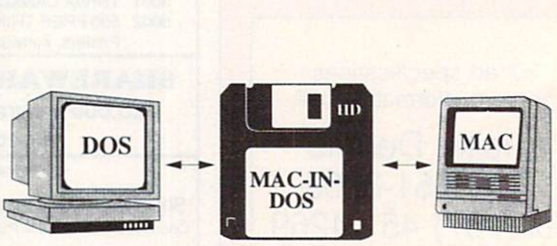
30 Day Money Back Guarantee

Requires a PC with DOS 3.0 or higher, VGA or EGA monitor, and a hard disk.

Circle Reader Service Number 160

MAC-IN-DOS

Software breakthrough lets PCs read, write, and format Macintosh high-density diskettes.



Call 1-800-628-3475 today.

Pacific Micro
201 San Antonio Circle, C250, Mountain View, CA 94040

Circle Reader Service Number 156

Medley BY CELL GOLD

Medley just went GOLD!

World Atlas
U.S. Atlas
CD GAME PACK II
Atlas Pack
MULTIMEDIA

NOW, DOUBLE SPEED AND TRUE 16BIT SOUND!

SOUND BOARD

TRUE 16BIT STEREO SOUND
MIDI INTERFACE AND 4:1 COMPRESSION
SAMPLING RATE OF UP TO 44.1 IN PLAYBACK AND RECORING MODES.

CD-ROM

DISK CAPACITY: 635MB "MODE2"
DATA TRANSFER: **300KB/SEC.** "MODE2"
ACCESS TIME: 320MS
MEMORY BUFFER: 64KB

2 AMPLIFIED STEREO SPEAKERS

INCLUDE ONE CD-TITLE BUNDLE

BUSINESS

LOTUS 123 W/ MULTIMEDIA SMART HELP!
PUBLISH-IT 2.0, 1000 CLIPART.
INTERNATIONAL BUSINESS & ECONOMICS.

COMPLETE MULTIMEDIA PACKAGE $499

GAMES

THE 7TH GUEST.
WING COMM./ULTIMA VI.
MARIO IS MISSING.
SHERLOCK HOLMES. DETECTIVE.

COMPLETE MULTIMEDIA PACKAGE $479

EDUCATIONAL

TOOLWORKS MULTIMEDIA ENCYCLOPEDIA.
THE SAN DIEGO ANIMALS.
REFERNCE LIBRARY.
WORLD ATLAS & US ATLAS.

COMPLETE MULTIMEDIA PACKAGE $469

MORE CD TITLES...

AMERICAN BUSINESS PHONE BOOK	$18
APOLLO SPACE SERIES	$18
AIRCRAFT ENCYCLOPEDIA	$18
CAREER OPPORTUNITIES	$18
CD GAME PACK II	$18
CIA FACT BOOK	$18
COREL DRAW 4.0 UPGRADE	$149
CHESSMASTER 3000	$22
FRESH ARTS	$22
GREAT CITIES MULTIMEDIA	$22
INTERACTIVE STORYTIME	$22
LOOM	$22
MONKEY ISLAND	$22
MAGAZINE RACK	$22
MAVIS TYPING MULTIMEDIA	$22
NATIONAL PARKS GUIDE	$22
PRESCRIPTION DRUGS GUIDE	$22
POWER TOOLS FOR WINDOWS	$16
Q & A 4.0	$43
SECRET WEAPON	$22
TIMETABLE SCIENCE & TECH	$22
US ATLAS WITH AUTOMAP	$23

ABOVE TITLES OFFERED AT THESE DISCOUNTED PRICES ONLY WHEN PURCHASED WITH THE MEDLEY MULTIMEDIA KIT.

CELL MICRO™

800-874-2355

VISA MasterCard
NO SURCHARGE

IN CALIFORNIA & INTERNATIONAL DIAL 714/830-2355
24 HOUR FAX 714/830-3712

MEDLEY & MEDLEY PLUS ARE TRADEMARKS OF CELL MICRO. ALL TRADEMARKS ARE OF THEIR RESPECTIVE COMPANIES.

Circle Reader Service Number 118

SOFTWARE BLOWOUT!

Lotus Works 1.0 -- $8.00
PFS Window Works 1.0 -- $12.00
Spinnaker 8n1 -- $10.00
Prodigy Starter Kits -- $5.00
Megafortress Mega-Pak -- $20.00
MS-Windows 3.0 -- $8.00
450 Truetype Font Pak -- $24.00
DR-DOS 5.0 - $4.00 / 6.0 - $15.00

Grollier's MPC Encyclopedia CD-ROM
$35.00 *(OEM Version)*
Mammals or Animals CD-ROM
$20.00 *(OEM Versions)*

Quantities Very Limited - Act Fast!

Call (713)-277-1717

Fax Inquires (713)-277-3525

All Orders Shipped C.OD. All Pricing Subject To Change Without Notice. All Pricing Limited To Inventory On Hand ONLY! $25.00 Minimum Order Please. $25.00 NSF Fee. Pricing Reflects Cash Discount. Over 250 Items In Stock -- Call For Complete Listing Of Our Current Inventory. Open M-F, 10 AM To 6 PM, CST.

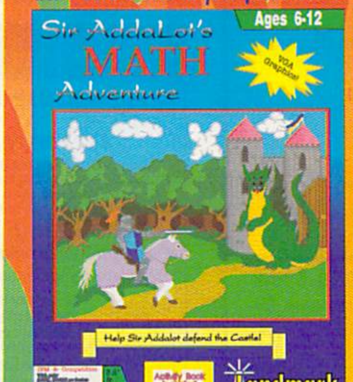
** We Buy Software - Fax Us Your List **

Circle Reader Service Number 176

Get your kids the Hottest New MATH game!

Sir AddaLot's MATH Adventure

But with a retail price of only $29.95 it won't burn a hole in your pocketbook!


Ages 6-12
Sir AddaLot's
MATH
Adventure
VGA Graphics!
Help Sir Addalot defend the Castle!
Activity Book Included Free!
Landmark
Lighting the way to brighter futures

Each of the five levels have new and exciting castles to explore.

Match the equations while dodging the fireballs in this dazzling arcade style game.

Attention Kids

- Face the fierce Dragon, Scorch
- Create your own moat
- Track high scores for comparing with friends
- Experience 256 color animations
- Great sound effects and music

Attention Parents

- Helps kids improve addition, subtraction, multiplication, and division skills
- Separate equation and dexterity controls allow kids of all abilities to enjoy the game
- Provides positive reinforcement
- Low price, high quality game by Landmark

Landmark
Lighting the way to brighter futures

Visit your local Retailer or Call 1-800-543-7947 and receive $10 off retail price! Dealer Inquiries Welcome. Requires VGA, 386SX or better, hard drive, 640K RAM.

Our fun filled demo is available for just $4.00 by calling 1-800-543-7947

FREE 486 Computer Color Monitor, Printer

FREE CBSI 486 SX Computer

You can earn $2,000 to $10,000 per month from your kitchen table providing needed services for your community. Computer Business Services needs individuals to run a computer from their home. If you purchase our software, we will give you a FREE 486 computer, VGA color monitor, 80 meg hard drive and a printer. If you already have a computer, we will give you a discount. The industrial revolution is over but the service revolution is just starting. Rather than setting up offices all over the U.S., we are showing individuals and couples how to provide our services and letting everyone involved in this service revolution reap the benefits. Our way of training our new service providers and their success rate is the talk of the computer industry. Call or write for a free 3 hour cassette tape and color literature and find out how easy it can be for you to earn money in your spare time and help your community. Begin part-time and still retain the security of your present position.

Call toll-free:

1-800-343-8014, ext. 303

(in Indiana 317-758-4415) Fax to: (317) 758-5827 *Or Write:*
Computer Business Services, Inc., CBSI Plaza, Ste. 303, Sheridan, IN 46069

LEARN COMPUTERS!

Home study. Learn the personal computer for a better career and an easier home life. Exciting, easy to follow. **Free booklet.**

CALL 800-223-4542

THE SCHOOL OF COMPUTER TRAINING
6065 Rosewell Road
Dept. KM68002, Atlanta, GA 30328

Circle Reader Service Number 183

SIGNS AND RUBBER STAMPS

USE YOUR LASER PRINTER TO MAKE

for your own use or a profitable sideline business

Self-Inking and traditional knob handle stamps can be made for less than $1. Retail prices will start in the $10+ range.

Informational signs, nameplates, control panels, name badges, and hundreds of other signage items can be made for pennies per square inch.

JACKSON MARKING PRODUCTS CO., INC.
Brownsville Rd., D-200, Mt. Vernon, IL 62864
Phone: 800-851-4945 Fax: 618-242-7732

Circle Reader Service Number 231

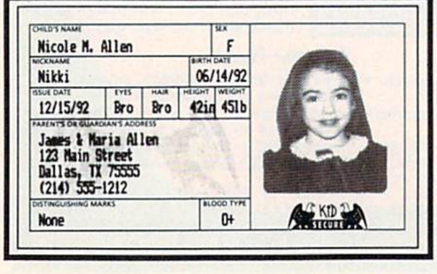
KiD SECURE OF AMERICA

This extraordinary program provides a sense of "security" by providing a complete identification of a child should an emergency occur.

- A Business You Can Be Proud Of
- Full or Part Time
- Continued Dealer Support
- Turnkey Package - Computer, printer, software, ID system supplies and training just $6995.00

CALL TODAY for FREE INFORMATION

214-248-9100
3216 Commander Dr.
Suite 101 • Dept 27
Carrollton, TX 75006



CHILD'S NAME: Nicole M. Allen
SEX: F
NICKNAME: Nikki
BIRTH DATE: 06/14/92
ISSUE DATE: 12/15/92
EYES: Bro
HAIR: Bro
HEIGHT: 42in
WEIGHT: 45lb
PARENT'S OR GUARDIAN'S ADDRESS:
James & Maria Allen
123 Main Street
Dallas, TX 75555
(214) 555-1212
DISTINGUISHING MARKS: None
BLOOD TYPE: O+

THE AMERICAN HEART ASSOCIATION MEMORIAL PROGRAM®

American Heart Association

This space provided as a public service.

Trick Your Kid Into Learning Math!

Adventure LearningWare™
presents
Treasure Hunt Math™

"Treasure Hunt Math is a good example of how educational software can be downright fun for kids." —Shareware Magazine.
"This is a great game, my 6-year old can multiply, level 2; my 9-year old will actually sit and do fractions!" —J. Stevenson, MD.

Includes **MathTris™**, the addictive, falling-blocks style math game!

Perfect for your kid; makes a thoughtful gift too.

- *Non-stop action game featuring colorful, animated graphics and sound presents elementary math for grades 1 through 6.
- *Over 1000 math facts covering addition, subtraction, multiplication, division, decimals and percents.
- *Features record keeping, math problem editor, high score list and printing of certificates of achievement.
- *School lab packs & site licenses available.

Requires IBM® PC or compatible with EGA or VGA graphics.

~~$39.95~~ Sugg. List Price. **Only $19.95 + $2.95 postage**
(California residents add $1.65 sales tax)

Order with Visa/MC: (800) 829-5519, 7 days a week.
Fax (408) 224-4455. Inquiries (408) 224-5519.
Or, send check or money order to: Adventure LearningWare
5667 Snell Ave. #236 • San Jose, CA 95123

Our 30 day money back guarantee: Your complete satisfaction or your money back.

Be a computer repair expert!

Professional-level home study teaches you PC repairs, troubleshooting, upgrading, installation, and servicing.
Increase your value as an employee or open your own business. No high-tech knowledge, no expensive instruments.
Free career literature.

800-223-4542

Name ____________________ Age ______
Address ____________________ Phone (____) ______
City ____________________ State ______ Zip ______

The School of PC Repair
6065 Rosewell Road
Dept. JM68002, Atlanta, GA 30328

Circle Reader Service Number 111

MAKE MONEY WITH A COMPUTER

With Best Personalized Books own a lifetime license for a patented product that will please adults, delight and educate children, and return high profits on a minimal investment.

That's the sure-fire success formula that Best Personalized Books offers to distributors who are building strong, easy to run, highly profitable businesses.

As the leader in the industry Best Personalized Books has exclusive licensing agreements from Mattel Toys Inc. for Barbie™, from Warner Bros. for Bugs Bunny™ and The Looney Tunes™ and from the National Football League (N.F.L.™).

Best Personalized Books become instant favorites because the child is the star of each story and friends and relatives join in on every adventure. An extensive array of titles appeal to a wide range of ages and tastes, and includes well-written stories on religious and ethnic themes that reinforce family values.

My Jewish Holidays
Santa and Rudolph
My Baby Book
African-American Heroes
Noah's Ark
Baby Jesus
Circus Party
Teddy Bear Land
Ninja
Dinosaur Land
Little Mermaid
Sports Superstar
Mother Goose
Beauty and the Beast
Barbie

No computer experience is necessary to create Best Personalized Books. A comprehensive training manual shows you how to personalize a book in just minutes. And with Best's strong marketing program, you'll find selling options are limitless. You can work at home, on location at malls, craft fairs, flea markets, home parties, or in conjunction with local businesses or fund-raising groups.

Strong dealer support is a priority, as is the commitment to helping you make even bigger profits with other popular personalized products including clocks, audio cassette tapes, birth announcements, calendars and stationery for teens and adults.

For just $1495 start your own highly profitable business creating personalized children's books with a computer.

Best Personalized Books Inc.

(214) 385-3800

475 **Best Personalized Plaza • 4350 Sigma Drive • Dallas, Texas 75244**

Call or write for free sample book and information kit

Best Personalized Books holds US patent 5213461 to produce personalized books. Barbie™, Bugs Bunny™, The Looney Tunes™, the N.F.L.™ and associated trademarks are owned and used under exclusive licenses from Mattel Toys, Inc., Warner Bros. and the National Football League.

PERSONALIZED CHILDREN'S BOOKS

The Star of This Book is
Tom Mosey
With Love from
Mommy
1990

2

Tom Mosey, age 3, of Dallas, Texas had a special friend. It was his teddy bear. They were always together. Audra, Chad, Randolph, Grandma and Grandpa also loved to play with Tom's teddy bear.

3

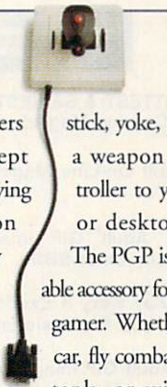
Very High Profit

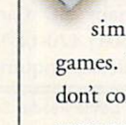
- With our process and a computer you can instantly produce the highest quality personalized children's books and stationery on the market today.
- All books are hardbound with full color illustrations and laser quality printing. Ideally suited for home based business, malls, department stores, fairs or mail order.
- Very simple to operate and highly profitable.
- Only a limited number of dealerships available.

For a complete information packet call today.

(214) 248-9100

D&K ENTERPRISES, INC. • 3216 COMMANDER DRIVE
SUITE 101 • DEPT 27 • CARROLLTON, TEXAS 75006





Notebook computers are great — except when it comes to playing simulation and action games. That's because they don't come equipped with a game port. ▸ Introducing the Parallel Game Port™ from Genovation. The PGP turns your notebook into a gamebook by converting the computer's printer port into a "virtual game port". With PGP, you also get a gender changer adapter, which lets you connect a joystick, yoke, pedals or even a weapon sytems controller to your notebook or desktop DOS PC.

The PGP is an indispensable accessory for today's serious gamer. Whether you race a car, fly combat, maneuver a tank, or wing along at 100 knots, the PGP's software features will enhance your play action. Look for the Parallel Game Port in the software section of your nearest computer dealer. Or call us at **(800) 822-4333.**

STICK IT TO YOUR NOTEBOOK.

Copyright © 1993 Genovation, Inc.

GENOVATION INC

Genovation, Inc. ▾ 17741 Mitchell North ▾ Irvine, CA 92714
(714) 833-3355 ▾ FAX (714) 833-0322 ▾ Sales: (800) 822-4333

Circle Reader Service Number 228

Where Adults Come To Play!

The Choice For HOT MODEM FUN!

- HOT CHAT Live W/Thousands of Ladies & Gents in Groups & Private!
- Tons Of Sizzling Hot Message Areas, Shareware Files and Adult GIFs!
- Matchmaker With "DATING-BASE"!
- Straight and Gay Sections!
- Live Competitive Tournament Gaming!
- Unlimited Connect With One Low Price!
- Local Numbers In Over 800 Cities!
- Plus Much Much More!

Now With Our Exclusive FANTASY Area!

ODYSSEY BBS

For Modem Signup or More Info Call:

818-358-6968

Over 18 (8N1)

Circle Reader Service Number 141

The power to overcome.

Easter Seals®

FREE!

Download the HOTTEST & SEXIEST Images from our ADULT On-Line Magazine - FREE!

LACE is an Adult On-Line Magazine that offers you:

- **ORIGINAL** Adult GIF Images not available on any other BBS!
- **GORGEOUS,** Sexy & Exotic Models both Amateur and Professional !
- **QUALITY** Adult GIF Images and VGA Movies produced by professionals !
- **HIGH SPEED** access available on ALL lines (14.4k down to 1200 baud).

Set your Modem to 8-N-1 and your terminal to ANSI Graphics and dial:

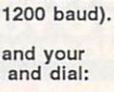
(818) 709 - 4275

Questions? Call our voice line at (818) 709-3795.

LACE

the on-line adult magazine

Must be 18 Years of Age or Older • Limited Offer



I'm Christy, the Systems Administrator and part time Glamour Model on LACE. Come & see my images & visit with me On-Line.

Circle Reader Service Number 178

Computer fun

Home Entertainment Organizer

Computerize your Video, Audio, and Book Libraries with this advanced database software for IBM. Search by multiple criteria. Instantly change sort order. Then print personalized labels or reports with a keystroke. Indispensable for the serious video or audiophile.

Now only $49.95
+ $3. S&H.
30 Day FREE TRIAL

Pay only after you test drive HEO on your own computer, or return it for full credit.

To order call
1-800-238-2154 *anytime.*

Circle Reader Service Number 145

T-Shirts
The Ultimate Soft-Wear!

Many sayings, pictures, colors...

- I've got the Computer Blues
- The more people I meet, the more I like my computer
- Upgrade Challenged!
- I fought the LAN, & the LAN won!
- Don't Panic! ● When all else fails, read the manual ...

Star Trek and SF t-shirts also.

For more information please contact:
HYPERLIGHT ENTERPRISES
1208 Duthie Avenue,
Burnaby, BC Canada V5A 2R4
T: (604) 420-1479 F: (604) 420-3891
Wholesale Inquiries Welcome

Circle Reader Service Number 129

25,000 SHAREWARE PROGRAMS ON 4 CD-ROMs $89

2 sets for $150

LATEST '93 EDITION -
30 DAY MONEY BACK GUARANTEE

More programs than ever before!!! Windows Applications... Games... Programming Tools... DataBase Accessories... Educational Aids... DeskTop Publishing... even OS/2... Word Processors... Utilities for Printers, Files, Keyboard, Screen, Clipart, Spreadsheets.. Communications... Photographs... CAD... Music... in short - programs for any application you can imagine!

Unique LISTER PROGRAM allows you to easily access ANY PROGRAM, IN ANY CATEGORY, in just seconds - load it onto your HD, and when you're finished, either keep it on the HD, or do the housekeeping to keep your HD uncluttered with programs you may use only infrequently.

OVER 4 GIGABYTES - 25,000 PROGRAMS - THE BEST SHAREWARE AND MOST VALUABLE DATA YOU'LL EVER FIND!! NO CLUBS to join... no monthly downloading fees... it's all there for you to try... to compare... to experiment with! ALL available within seconds!!! YOU CAN'T FIND A WIDER SELECTION - OR A LOWER COST PER PROGRAM ANYWHERE ELSE! ***LATEST '93 EDITION***

ORDER YOURS TODAY RUSH $89 + $5 S/H, CASH, CHECK, MONEY ORDER! CODs OK!

DEALERS WANTED

CROSLEY SOFTWARE
BOX 276, ALBURG, VT 05440
Fax: (514) 345-8303 Tel: (514) 739-9328

Circle Reader Service Number 226

• AMIGA • IBM • MAC • WINDOWS •
GENERAL INTEREST • CLIP ART • GAMES • FONTS

You Are Invited

to sample the world's finest selection of leading software.

Presented by the world's largest distributor of shareware.

Call for information.

SMC
Software of the Month Club®
5816 DRYDEN PLACE • CARLSBAD, CA 92008

PH: 619•931•811, EXT. 509
FAX: 619•929•1163

Circle Reader Service Number 142

PHOENIX FIRE . . . a kind of high-tech Ouija Board. $39.95.

THE MAGIC MIRROR . . . a toolbox for your mind. E. Kinnie, PhD., Clinical Psychologist. $39.95.

MERLIN . . . an apprenticeship. $29.95.

I CHING . . . ancient Chinese wisdom and prophecy. $29.95.

THE MAGIC MOUNTAIN . . . a journey into another reality. Not for children. Male and female versions. $39.95.

Blue Valley, 29 Shepard St., Walton, NY 13856

MasterCard/Visa 1-800-545-6172

Circle Reader Service Number 173

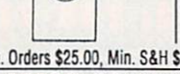
COLOR RIBBONS & PAPER

COLORS: BLACK, RED, BLUE, GREEN, BROWN, PURPLE, YELLOW

Ribbons Price/Each	Black	Color	T-Shirt
Brother 1109	$5.50	$6.50	$7.50
Citizen GSX140, 4-CLR	$4.00	$12.50	$15.00
Epson MX-80	$3.25	$5.00	$6.75
Epson 3250	$6.50	$10.00	
Okidata 182/192	$5.00	$7.50	
Panasonic 1180/1124	$5.00	$7.50	
Panasonic KXP 2123 4-CLR	$6.50	$15.00	$20.00
Star NX1000 4-CLR	$3.50	$6.25	$10.00
Star NX1020 4-CLR	$6.00	$10.50	$15.00
Star NX2420 4-CLR	$6.00	$12.00	$15.00

COLOR PAPER: 200 SHTS/ BRIGHT PK. $10.90
PASTEL PK. $7.90 BANNER PAPER 45 FT. RL. $8.95
CERTIFICATE PAPER: $9.95 PK.

CUSTOM T-SHIRT, DESIGN YOUR OWN

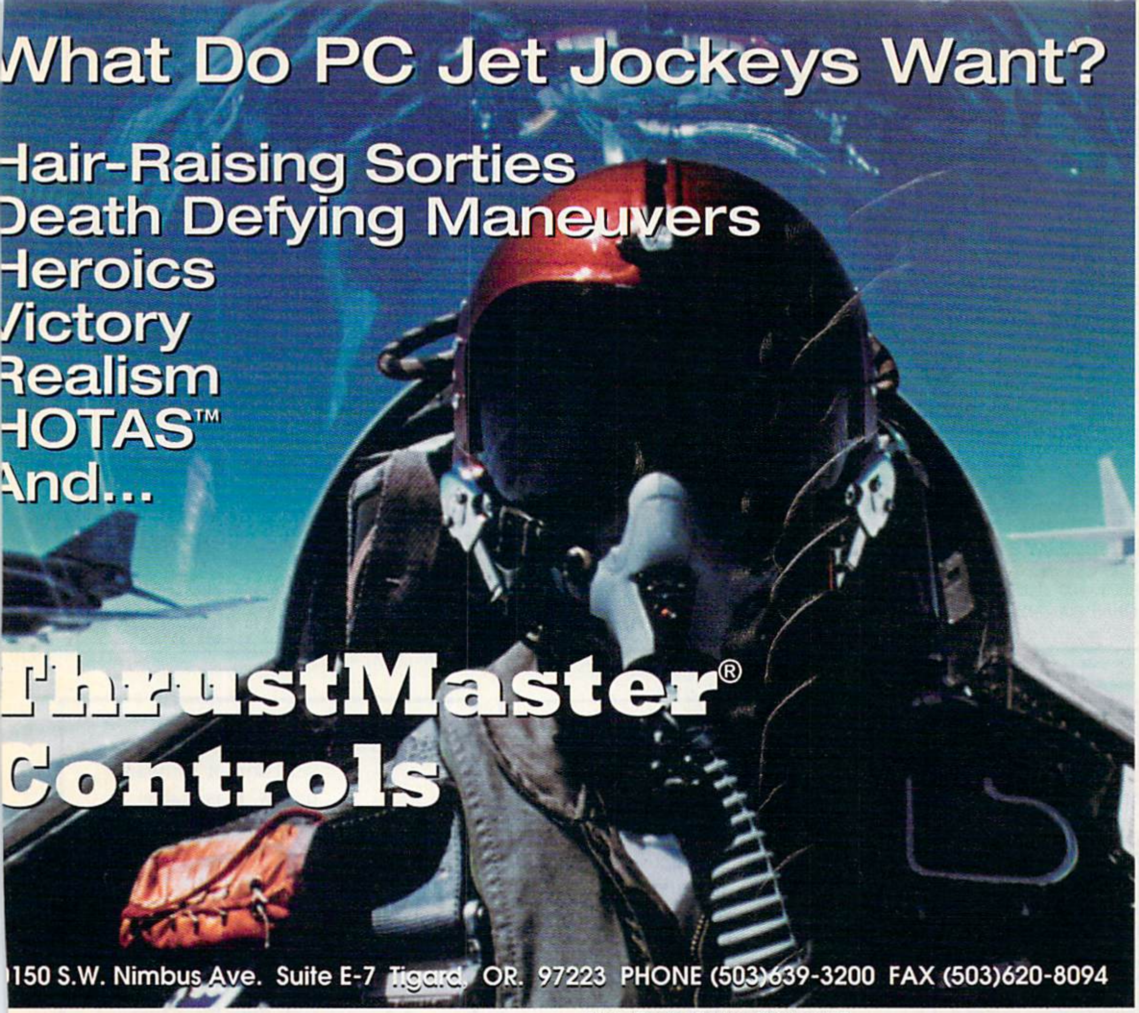


- HEAT TRANSER RIBBONS
- TRANSFER PAPER FOR DOT MATRIX AND INK JET PRINTERS
- HEAT TRANSFER LASER TONER

Min. Orders $25.00, Min. S&H $6.00, Prices subject to change!

RAMCO COMPUTER SUPPLIES
P.O. Box 475, Manteno, IL 800-522-6922 or 815-468-8081

Circle Reader Service Number 138

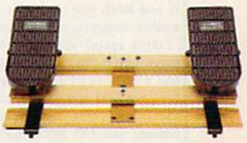

What Do PC Jet Jockeys Want?
Hair-Raising Sorties
Death Defying Maneuvers
Heroics
Victory
Realism
HOTAS™
And...
ThrustMaster®
Controls

150 S.W. Nimbus Ave. Suite E-7 Tigard, OR. 97223 PHONE (503)639-3200 FAX (503)620-8094

NEW PRODUCT

The Mark II WCS™ (Programmable Throttle; Also Allows you to Program your Joystick)

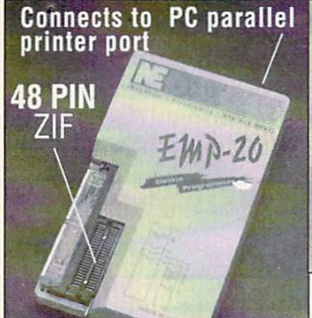
FCS™ (Joystick)



RCS™ (Rudder Pedals)

Circle Reader Service Number 147

Device Programmers


Connects to PC parallel printer port
48 PIN ZIF
EMP-20

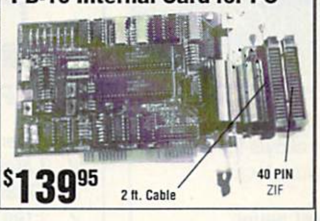
$449.95 EMP-20

SA-20 8 Gang Eprom

20 X 4 Line LCD Display
SA-20
20 Key Keypad

$750.00

PB-10 Internal Card for PC


2 ft. Cable
40 PIN ZIF

$139.95

- Easy to use software, on-line help, full sceen editor
- **Made in USA**
- 1 & 2 Year Warranty
- Technical Support by phone
- 30 day Money Back Guarantee
- FREE software upgrades available via BBS
- Demo SW via **BBS (EM20DEMO.EXE) (PB10DEMO.EXE)**
- **E(e)proms** 2716 - 8 megabit, 16 bit 27210-27240, 27C400 & 27C800,
- **Flash** 28F256–28F020, (29C256–29C010 (EMP-20 only))
- **Micros** 8741A, 42A, 42AH, 48, 49, 48H, 49H, 55, 87C51, 87C51FX, 87C751,752
- **GAL, PLD** from NS, Lattice, AMD-**16V8, 20V8, 22V10** (EMP-20 only)

FOR MORE INFORMATION CALL

NEEDHAM'S ELECTRONICS, INC.

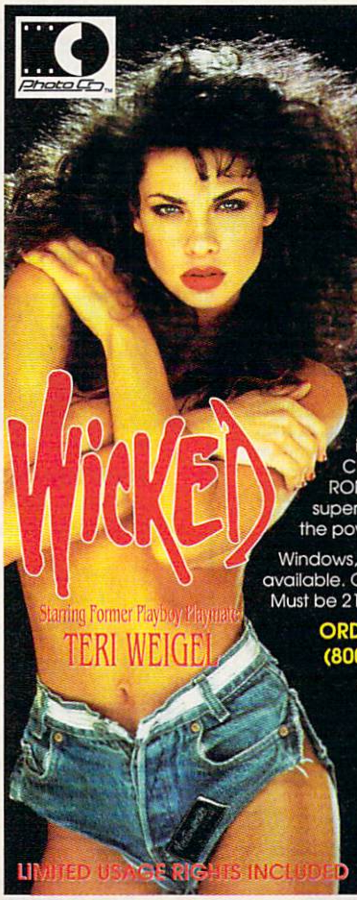
4539 Orange Grove Ave.
Sacramento, CA 95841
(Monday-Friday, 8 am-5 pm PST)

(916) 924-8037
BBS (916) 972-8042
FAX (916) 972-9960

C.O.D.

Circle Reader Service Number 191

STAR WARE PUBLISHING CORPORATION


Wicked
Starring Former Playboy Playmate
TERI WEIGEL
LIMITED USAGE RIGHTS INCLUDED

Introducing the First Adult Photo CD Special Introductory Price of $129, save $70

See ex-Playboy Playmate, Teri Weigel, in the first adult Photo-CD. Enjoy these live action images, photographed during the filming of this critically acclaimed movie.

Experience the hottest trend in adult entertainment. Photo-CD technology takes adult CD-ROMs to an exciting new level of superb quality imagery. Discover the power of Photo-CD!

Windows, DOS and MAC versions available. Other titles available. Must be 21 to order.

ORDER HOTLINE
(800) 354-5353

Fax (305) 426-9801 BBS (305) 428-0012
Dealer inquiries: (305) 426-4552

P.O. Box 4188 - Dept # 68
Deerfield Beach, FL 33442

FREE Kodak's Photo CD Access Software

Photo CD Symbol is a trademark of Kodak used under license

Circle Reader Service Number 130

SeXXy Software™
SeXXy DISKS™

SeXXcapades™ . . . The GAME
The First Adult Game with TRUE SOUND and 256 Color VGA Graphics

The game everyone has been waiting for. For that evening you won't forget with a loved one or group of very close friends. Fulfill your sexual desires. Find our how your partner would really like to make love. I Over 80 Color VGA Scenes • Real Voices Guide the Action • Foreplay Option • Play with 2-8 Close Friends. Now supports SoundBlaster™ cards!

$79 – Special Offer: **$69** with purchase of any CC disk. / VGA and hard disk required - shipped on high density disks.

CONNOISSEUR COLLECTION ALL NEW! In 256 Color VGA!!

ALL movies have sound - play thru standard speaker or SoundBlaster™

SeXXy Disk #CC1 • ★ YOU BE THE STAR ★ The FIRST CUSTOMIZABLE movie allows you to write the dialog and the title.

SeXXy Disk #CC2 • THE FIRST SOUND MOVIE! The first computer movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY!

SeXXy Disk #CC3 • THE BEST MOVIE! The best computer movie available. Only for the serious collector. 256 stunning VGA colors.

SeXXy Disk #CC4 • VOLUPTUOUS MOVIE with Sound! See and hear a symphony of exceptionally proportioned women.

SeXXy Disk #CC5 • ODDITIES MOVIE with Sound! See men of incredible proportions and women with unique abilities - UNBELIEVABLE!

*Prices: 1 Movie **$29**. 3 Movies **$65**. 5 Movies **$94***

Now You Can Have Your Own GIRLFRIEND™ . . . a sensuous woman living in your computer!

GIRLFRIEND is the first **VIRTUAL WOMAN**. You can watch her, talk to her, ask her questions and relate with her. Over 100 actual VGA photographs allow you to see your girlfriend as you ask her to wear diffrent outfits, and guide her into different sexual activities. As a true artificial intelligence program, **GIRLFRIEND** starts with a 3000 word vocabulary and actually GROWS the more you use it. She will remember your name, your birthday an your likes and dislikes. **GIRLFRIEND** comes with the base software and **GIRLFRIEND LISA.** Additional girls will be added. This program requires 7-10MB of free space.

SG3 GIRLFRIEND - Special Introductory Price **$69. FREE** - Second GIRLFRIEND Just Added.

ADD $4 S/H • 3.5" Or FOREIGN ORDERS ADD $2/DISK • IN PA ADD TAX • MUST STATE AGE OVER 21 YEARS.

VISA/MC Orders Only: 800-243-1515 Ext. 600FK / 24HRS / 7 DAYS

FAX (215)997-2571 • Or CK/MO to: Sexy Software, P.O. Box 220, Dept. 600FK, Hatfield, PA 19440

SeXXy Software™
SeXXy CD-ROMS™

FREE $99 Shareware CD-ROM

with purchase of any 3 CD-ROMS. Not a cheap demo disk – contains thousands of valuable programs in all catagories – games, windows, business, education

SeXXy FLIX

Full Length Digital Movies - Ours Exclusively!

KING DONG – The dirtiest dinosaur movie ever made - CRYSTAL HOLLAND stars with prehistoric monsters, cannibals, and lots of special effects.

TOO NAUGHTY TO SAY NO – HARRY REEMS and GINGER LYNN star in an erotic daydream in a boarding school for girls – from CABALLERO HOME VIDEO, dir. SUZE RANDALL.

SEX GAMES – When a hacker taps into a computer dating service he is able to program the wildest fantasies of its sexiest member – SAUNA GRANT stars.

SeXXcapades . . . The MOVIE – See incredible uses of a mouse and a joystick as a group of friends play our popular SeXXcapades game.

NO HARD DISK SPACE REQUIRED – WINDOWS NOT REQUIRED

SeXXy CD-ROMS

SeXXy CD #1 the premiere adult XXX collection – 680 MB of action with: 5268 VGA pictures, 87 movies, 674 stories, games DARE TO COMPARE!

SeXXy CD #2 an exclusive collection containing over 900 Super VGA pictures (1024 x 768 x 256) and over 400 VGA pictures (640 x 480 x 256) These are pictures that cannot be found anywhere else! The women and the quality are stunning

SeXXy CD #3 another collection of over 650 MB of the hottest pictures available. Over 5,000 VGA pictures, movies and utilities that will have you spending days just trying to see it all!

MENU DRIVEN VIEWING - NO DUPLICATION

MIX & MATCH CD-ROMS / SeXXy PIX™

BUSTY BABES • ECSTACY • ASIAN LADIES • HOT PIX 2, 3 & 4 • PC PIX 1, 2 & 3
TROPICAL GIRLS • STORM 3 • EROTIC GIRLS • 7TH HEAVEN • EROTIC ENCOUNTERS
ADULT PALETTE • MY PRIVATE COLLECTION 1 & 2 • ANIMATION FANTASIES 1 & 2 • PORKWARE

ALL CD-ROMS: First 3: **$99 each** or **3 for $199** (Plus **FREE Shareware CD-ROM**)
Then: **$69 each** or **3 for $149**

Circle Reader Service Number 116

LIQUIDATIONS CLOSEOUTS & BARGAINS

If you think you can't afford quality commercial software ... think again! Although we carry the top 100 software hits and a full line of accessories for your IBM compatible, we specialize in closeouts, liquidations and CD ROM software at rock bottom prices! Let us do the bargain hunting for you! Find out why thousands of computer users choose us as their one stop software supplier.

We publish one of the best catalogs in the industry. Call or write for your free copy!

CD ROM Examples For Your PC

The Animals	$19.95
CICA Windows	$15.95
Colossal Cookbook	$15.95
Encyclopedia v5.0	$47.95
Jones in Fast Lane	$17.95
Night Owl v9.	$24.95
Pro Phone 1992	$32.95
Shareware Extrav.	$37.95
So Much Screenware	$25.95
Sound Sensations	$15.95
Too Many Typefonts	$15.95
VGA Spectrum v2	$18.95
Willy Beamish	$17.95
Physical Therapy XXX	$19.95
Rimfire Pacific XXX	$34.95
Visual Fantasies XXX	$24.95

SOFTWARE SUPPORT

Software Support International
2700 N.E. Andresen Rd.
Suite #A-10
Vancouver Wa 98661
(206) 695-1393

CALL TOLL FREE TODAY! **1-800-356-1179**

Major Credit Cards Accepted.

Above examples don't include S/H charges. Call or write for details.

Circle Reader Service Number 210

B. R. ROMS

C D ROMS

ALL CATEGORIES

BUSINESS-GAMES-CLIPART-GRAPHICS
RELIGION-EDUCATIONAL-HEALTH-
LARGE ADULT LIBRARY (OVER 21)

DISCOUNT PRICES

CALL FOR LATEST LISTINGS

1-800-757-7778

VISA-MASTERCARD-MONEY ORDER
MOST ORDERS SHIPPED 24 HRS.
P.O. BOX 216, LAFONTAINE, IN 46940

Circle Reader Service Number 121

Ready . . .	for our extensive selection of software at low, reasonable rates
Set . . .	for thousands of titles for your IBM, Amiga, Atari, Mac, CD Rom & Genesis?
Go . . .	Call now for a free listing

1-800-433-2938

Wedgwood Rental
5316 Woodway Drive
Fort Worth, Texas 76133

Circle Reader Service Number 172

The Amish Outlaw

Shareware Company
3705 Richmond Ave. Staten Island, NY 10312

The Amish Outlaw 10 Most Wanted

1. **Solar Winds**-a unique combination of fast paced arcade action and an outer-space role playing game, with 256 color VGA animated graphics. (JOYSTICK) (VGA) (SB)
2. **Major Stryker**-an excellent shoot'em up game from Apogee, Major Stryker's mission is to destroy the evil aliens and return home to the beautiful Yoshira. (VGA) (SB)
3. **Zone 66**-an ultra high tech 32-bit arcade game for 386 &486 PC's. You pilot your fighter jet through a 360 degree scrolling combat zone that's jam packed with enemies & terrain. (VGA) (Sound Blaster) (Joystick) (HD) (2 Meg RAM)
4. **Monster Bash** - Help Johnny Dash save his dog from count chuck. The most animated game apogee has created to date.(Sound Blaster) (VGA)
5. **Overkill** - an excellent graphic shoot 'em up game in which you destroy planet after planet gaining power as you progress from planet to planet. (VGA) (SB)
6. **Space Chase**- Jason Storm battles the forces of evil for control of a vast city! 10 massive levels. (EGA-VGA) (HD) (SB) (286 OR BETTER)
7. **Catacomb Abyss 3D**- Battle mages, skeleton warriors and zombies as explore the catacombs. (PC-13)(588k of free ram) (EGA-VGA) (Hard Drive) (Sound Blaster)
8. **Bio Mence**-Total action, Duke Nukum-style, shoot-everything-that-moves adventure. (Sound Blaster) (EGA-VGA)
9. **Megatron**-enter the labyrinth combat zone and hunt down the adversary, experience the highest level of virtual reality combat available in shareware to date. (2 can play by modem) (VGA) (Hard Drive) (mouse optional) (2 disks)
10. **Gateworld** -Captain Klondike meets the G.O.R.G. machine in an asteroid in this great arcade action game.(VGA) (Sound Blaster)

3.5" AND 5.25" SAME PRICE 1-9 DISKS $3.00 10& UP $2.50
$3.00 SHIPPING & HANDLING

CALL: 1-800-947-4346

FOR FREE CATALOGUE

Circle Reader Service Number 268

REMOVE HARDWARE LOCKS

PROTECT YOUR INVESTMENT!
MAINTAIN PRODUCTIVITY!

Software utility that allows for the removal of hardware locks.

Available for most major CAD/CAM and PCB software programs

Easy - Simple - Guaranteed

Programs start at $99.00 U.S.

Visa and Mastercard Welcome
Call or Fax for more Information

SafeSoft Systems Inc.
201 - 1111 Munroe Ave.
Winnipeg, Mb. Canada R2K 3Z5

PH (204)669-4639
FAX(204)668-3566

Circle Reader Service Number 212

FREE SHAREWARE CATALOGUE

- ✓ Over 3500 Programs
- ✓ Latest Versions
- ✓ Guaranteed Virus Free
- ✓ Free 278 Page Catalogue

(On High Density Disk unless Specified Otherwise)

(519) 825-9236
(800) 563-6647
(519) 825-3780 (Fax)
(519) 825-7480 (BBS)

SHAREWARE CENTRAL

P.O. Box 897, Wheatley, Ontario N0P 2P0

Circle Reader Service Number 171

Voice Mail Cash Machine

Press 1 for sales, 2 for service, 3 for live operator

Make thousands of dollars effortlessly by installing a *BigmOuth* voice package in your 286/386. Use it to answer your home-office phone, rent pocket-pagers, advertise products, or operate a pay-per-call service using major credit cards, passwords or a nationwide 900 #.

To get started, order our **$25 PC Opportunity Toolkit.** It contains all the information you need & its cost is applied to all future purchases.

A Few Home-Based Ventures Featured In Our $25 Toolkit!

- **BigmOuth** voice/fax/pager rentals $295. (Demo $25)
- **QuickLine** write programs in QBasic $1745. (Demo $25)
- **ClientCaller** outbound prospector $1450. (Demo $25)
- **KinderChek** latchkey child monitor $2250. (Demo $25)
- **Rise'n'Shine** wake-up & reminder service $1995. (Demo $25)
- **TollBridge** sell long distance time $1995. (Demo $25)

DemoSource℠
The Voice Application Superstore

TRY our demoline! 818 718-9560

8345 Reseda Bl, Ste 202
Northridge, CA 91324 USA

To order, call 24 hours:
800.283.4759

Trademarks belong to their publishers

Circle Reader Service Number 131

C:\CALL\WINDOWS.900

File Edit Search Dial 1-900-454-4370 69¢ Per Minute

WINDOWS 900

The Number One Shareware Source For:

- *Business*
- *Utilities*
- *Programming*
- *Fonts*
- *Games*
- *Graphics*

New! Easier To Use!

LARGE XXX ADULT AREA!
Must be 18 or over to call . . .

Use Your High-Speed Modem And Call:

900-454-4370

2400 bps - 16.8 bps USR V.32/bis V.42/bis 8,N,1

69¢ per minute

NO CREDIT CARDS
NO MEMBERSHIP.
FAST, EASY ACCESS
NO LONG DISTANCE CHARGES

Callers under 18 years of age MUST have parents permission

Circle Reader Service Number 128

FREE CD-ROM DISC!

Mega Demo & Test contains 350 Megs of PC Shareware & PD software. Including Special CD-ROM Benchmark and Test Utilities written by our programming staff, & NOT available on any other CD-ROM Discs. Our Special Test Utilities measure throughput as well as access time in a reliable and consistent manner for a meaningful real-world benchmark for CD drives. The Disc and Interface Software are fully functional (Even for BBS Use) and not crippled in any way. When purchased separately Mega Demo and Test is $14.00 plus $6.00 for S&H However for a Limited Time This Demo and Test CD-ROM Disc is Free with any CD Disc purchase.

These are the Only Shareware & PD CD-ROM Discs with both a DOS, and a Windows 3.1 "Hypertext" Retrieval Interface. Plus All CD Discs are BBS Ready, and Include files.bbs plus our BBS Door with "Remote User" Mouseable Pull-Down Menu Interface.

PROFIT PRESS, 824 E. Ft. Lowell,
Tucson, AZ 85719 - Info (602) 770-0000
FAX (602) 770-0005 - BBS (602) 770-0008

The prices listed above do not include shipping and handling. Special shipping and shipping to foreign countries is available.

MasterCard VISA

S.R.P. $79.00 ea. **New! JUST RELEASED! New!** S.R.P. $79.00 ea.

Mega CD-ROM³ — PC Shareware Spectacular

650 Megs 1 Plus Gigs Uncompressed! Our Newest in The Mega CD-ROM Series. Contains Utilities of All Types, Word Processors, Data Base, Communications, Graphics Tools, CAD, Business, Education, Programming, Hobby, Games, Sports, Sound Files, 256 Color GIF's, FLI's, Bibles, Fonts, Windows Programs, BBS, Plus Much More!

Mega Windows² — Windows Shareware / Public Domain

Our Newest in the Mega Windows Series. This Disc Contains Windows Utilities of All Types, Windows Application Programs of All Types. Windows Communications Programs, Windows Games, Windows Fonts, Windows 256 Color Graphics .BMP, Windows Sound Files .WAV, Windows Drivers and Icons, plus OS/2 Shareware, and Much Much More!

Mega Games¹ — PC Games, Graphics & Sounds

Contains PC Games from Shareware Companies such as Apogee, and Epic, plus many many others. Game Bytes Electronic Magazine, with file categories that include Arcade, Adventure, Puzzles, Mind & Strategy, War Games, Card Games, RPG Games, Plus 256 Color GIF's, FLI's of all types & Includes Sound Files, .MOD, .ROL, .WAV & .VOC

Publisher Direct Price **$29.00 ea.** Or All 3 New Mega Fantastic MEGA CD-ROM Discs for Only! **$59.00**

ForBidden Subjects¹

This Disc Contains Hacking, Phreaking, Tone Box Information, Anarchy, Subculture, Magic, Internet & Computer Security Secrets, Bomb Plans, FBI & Police Net Files, Virus Code, Sick & Twisted Graphics, UFO, Occult, Even Ham Radio Files, Plus Much Much Nore! Everything Fun and Interesting That Absolutely No One Wants You to Know About! Includes MegaSearch for those Fascinating Late Night Text Searches. & (If You Dare) for BBS there's files.bbs Plus MegaDoor and MegaTerminal.

Our Exclusive! Special Price **$39.00** S.R.P. $79.00 ea.

Genuine SONY Caddies $3.50 each with ANY $49.00 CD-ROM Disc Purchase Limit of 10 Per Customer

ORDERS ONLY! CALL TOLL FREE
1-800-843-7990

fao Gold

Volumes 1, 2, & 3 "Best of the Best"

For Adults Only "GOLD" "Wife Proof Labels"
Each Over 600 MegaBytes
Many Not On FAO 123 - 256 Color SVGA Gif's with NO BBS Logos! Plus Animated FLI's, GL's, & DL's, Includes Games, and Fantasy Text Files. S.R.P. $79.00 each.

"The Best of the Best" $39.00 each The Full Set All 3 Only! **$99.00 SET**

fao

Volumes 1, 2, & 3

For Adults Only "Wife Proof Labels"
256 Color SVGA GIF's,
Plus Animated FLI's, GL's & DL's
Includes Games, & Fantasy Text Files.
3 Disc Set 1,892 Megs - 16,000+ Files!
S.R.P. for this Set of 3 Discs $199.00.

3 Disc Set 1,892 Megs contains over 16,000 Files! All 3 Only! **$69.00 SET**

Circle Reader Service Number 256

CLOSEOUTS
For IBM/MS-DOS:

$10 MICROPROSE DEALS
MILLENIUM, DR. DOOM'S REVENGE, AMAZING SPIDERMAN, LIGHTSPEED, COVERT ACTION -or- TWILIGHT 2000

$15 MICROPROSE DEALS
KNIGHTS OF THE SKY, FLAMES OF FREEDOM, RED STORM RISING, ALLIED FORCES, MEGATRAVELLER 1

LAND, SEA & AIR BUNDLE!!
ONLY $19.50
Includes: Pirates!, Airborne Ranger & Gunship. 5.25" only.

MICROPROSE SPECIAL
Your Choice $25 each
GUNSHIP 2000
F-117A STEALTH FIGHTER

SIERRA $10 SPECIALS
CAMELOT, POLICE QUEST 2, -or- COLONEL'S BEQUEST.

SIERRA DEALS $20 EACH
3 or more, ONLY $15 EACH
KING'S QUEST 1, 2, 3 -or- 4, HEART OF CHINA, RISE OF THE DRAGON, LEISURE SUIT LARRY 1, 2, 3 -or- 5, ZELIARD, QUEST FOR GLORY 1 -or- 2, POLICE QUEST 1 -or- 3, SPACE QUEST 1, 2 -or- 3.

A-10 TANK KILLER, HEART OF CHINA & STELLAR 7 BUNDLE
ALL 3 SIERRA GAMES...$30

MORE SPECIAL DEALS

V for VICTORY: D-DAY UTAH BEACH	$15
STAR TREK 5: FINAL FRONTIER	$20
SEX VIXENS FROM SPACE	$14.50
B.A.T., by UBI-SOFT	$10
NIGHT HUNTER, by UBI-SOFT	$5
MUTANOID WORD CHALLENGE	$15
MUTANOID MATH CHALLENGE	$15
MONTY PYTHON'S FLYING CIRCUS	$5
BATTLECHESS 2, by INTERPLAY	$15

CREDIT CARD ORDERS
$25 MINIMUM.
1-800-676-6616
Orders Only, please!!

COMPSULT
P.O. BOX 5160
SAN LUIS OBISPO, CA 93403

WE ALSO CARRY APPLE, MAC, C64/128, AMIGA, ATARI & MORE
To order, send check or money order to the above address. California orders must include 7.25% sales tax. All orders must include shipping charges of $5 for U.S.A., $8 for Canada, or $15 for International. For our complete catalog send $2 in U.S. postage stamps or cash. A catalog is sent FREE with any order. Be sure to specify your computer type & disk size when ordering.
For all inquiries & additional information, call (805) 544-6616.

Circle Reader Service Number 150

√VALUE SOFTWARE
"CHECK" Us OUT

The Best Shareware
On The Planet

- √ *Windows/Games/Fonts*
- √ *Multimedia/Graphics*
- √ *Educational/Utilities*
- √ *Desktop Publishing*
- √ *Business Applications*
- √ *New User Start Up Kits*

IBM Compatible/Virus Free/ASP Member

FREE Catalog, Call
800-824-0413

Circle Reader Service Number 127

2000 Fonts

Fantazia Fonts and Sounds
Over 2000 TrueType and Adobe Fonts on CD-ROM
Hundreds of VOC Files

Included is a HUGE 102 page book with a sample printout of all the fonts.

For a limited time, you can get the Largest Collection of Fonts Available for an AMAZING

$49.99

1-800-951-0877

Fantazia Concepts, Inc.
35143 Vine Street
Eastlake, Ohio 44095

Fax
216-951-9241

Circle Reader Service Number 134

FREE
IBM & MAC SOFTWARE
CATALOG
32 Pages! ASP Member

SOFTSHOPPE, INC.

P.O. Box 247
ARTESIA, CA 90701
Tel: (310) 802-1333
FAX: (310) 802-1494

Toll-Free—24 Hrs.
1-800-851-8089

Circle Reader Service Number 126

Save BIG $$$ on printing costs

Jet-Master

Re-usable jet-printer recharge kits, Single and Multicolor. Buy kit once, then just buy ink as needed. Costs as low as $1 per recharge. **from $29.95**

WaterProof Ink Available

Re-ink your ribbon cartridges for less than 5¢ with the famous MacInker™
Over 210,000 sold

Beautiful printing and longer printhead life.
Avg. cartridge can be re-inked 60-100 times.

Universal cartridge model	79.95
Epson MacInker	49.95
Multicolor Adapter (4-band ribbons)	40.00

Computer Friends, Inc.
14250 NW Science Park Drive - Portland, OR 97229
To Order **1-800-547-3303** Tel. **(503) 626-2291**

Circle Reader Service Number 254

IBM PC, PCjr XT, AT, & Tandy Users

Not everyone needs the fastest computer money can buy. Run Lotus 1-2-3, WordPerfect, dBase, and most other software without buying a new computer! We specialize in hardware products that allow older computers to run the latest software.

Call for information and free catalog!

You don't have to buy a new Computer to run the Latest Software!

(800) 922-7257

PC ENTERPRISES

2400 Belmar Blvd.
PO Box 292
Belmar, NJ 07719

Computer Upgrade Specialists Since 1984

Circle Reader Service Number 250

$ WIN LOTTO! $
GAIL HOWARD'S
SMART LUCK®
SCIENTIFIC LOTTERY SYSTEMS

Won 39 Lotto Jackpots Worth $79.2 Million Dollars!

ADVANTAGE PLUS™ *and* COMPUTER WHEEL™

ADVANTAGE PLUS™ — COMPLETE drawing results for ALL 59 pick 5, 6, & 7 # Lotto games FREE • Over 50 scientific charts & reports to zero in on winners • Automatic SMART PICKS™ selects best Lotto #s instantly • Test past performance of SMART PICKS™ with one key stroke! • 86-page manual on disk shows how to identify winning patterns • A $295.00 value.

COMPUTER WHEEL™ — Has 252 Lotto Wheeling Systems with specific win guarantees. All flawless. Find one system that fails its win guarantee, and you get DOUBLE your money back!

BOTH for only $99.95 + $3 S/H
(IBM/Comp. 5.25 or 3.5)

USE THIS SYSTEM AND YOU WILL TRASH ALL YOUR OTHER LOTTERY SOFTWARE!

A *PROVEN* WINNER! · DON'T SETTLE FOR LESS.

1-800-876-4245
VISA **SMART LUCK®** Software MasterCard
Dept. C-10, P.O. Box 1519 • White Plains, NY 10602
1-800-876-GAIL (4245) or 914-761-2333

Circle Reader Service Number 109

Games Too Expensive?
Consider Pre-owned Software

- Save big $$$ over new
- Original disks and manuals
- IBM - AMIGA - C64
- Hard-to-find classics plus all the latest releases
- Call or write for free catalog (specify computer)

Bare Bones Software
940 4th Ave #222 Huntington WV 25701

1-800-638-1123

Customer Service: 304-529-0461
BBS for complete list: 304-529-7050

Have FUN while learning with...

Legacy Software's

MUTANOID MATH CHALLENGE

Arithmetic practice
Over 200 word problems
Critical thinking skills

MUTANOID WORD CHALLENGE

Spelling/vocabulary practice
65,000 word on-disk dictionary
Critical thinking skills

MS-DOS or Macintosh
Ages 7 and up • $49.95 each
Call for FREE demo disk 1-800-532-7692

Circle Reader Service Number 164

CLASSIFIEDS

BUSINESS OPPORTUNITIES

WE'LL PAY YOU TO TYPE NAMES AND ADDRESSES FROM HOME. $500.00 PER 1000. Call 1-900-896-1666 ($1.49 min/18 yrs.+) or Write: PASSE-XC1193, 161 S. Lincolnway, N. Aurora, IL 60542

HOW TO MOONLIGHT WITH YOUR COMPUTER

Free Information. Must reading for everyone wanting their own business.
AICTC, Box 2615, Pasadena, CA 91102
1-800-422-1722

CABLE TV

CABLE TV DESCRAMBLERS

Converters & Accessories

STOP RENTING!!

SAVE MONEY! OWN YOUR EQUIPMENT

All Major Brand Names • Lowest Prices!!

FREE 30 Day Trial • FREE CATALOG

Add-On Cable Co. **1-800-334-8475**

Circle Reader Service Number 359

Closing date for December classifieds is September 15.

Call/Fax your ad (516) 757-9562

CABLE TV

FREE CATALOG

• CABLE T.V. BOXES - ALL TYPES •
• LOW PRICES • DEALER PRICES •

ACE PRODUCTS
1-800-234-0726

Circle Reader Service Number 352

CABLE TV

- Jerrold®
- Oak
- Zenith
- Hamline
- Tocom
- Pioneer
- Scientific Atlanta

EXCELLENT PRICES!

1-800-826-7623

B&B

3584 Kennebec, Eagan, MN 55122
30 DAY TRIAL • 1 YR. WARRANTY
VISA MC AMEX DISC COD

Circle Reader Service Number 370

CABLE TV

CABLE TV CONVERTERS

Why Pay A High Monthly Fee?
Save $100's A Year

- All Jerrold, Oak, Hamlin, Zenith, Scientific Atlanta, and more.
- 30 Day Money Back Guarantee
- Shipment within 24 hours
- Visa/MC and C.O.D.

No Illinois Orders Accepted

Purchaser agrees to comply with all state and federal laws regarding private ownership of cable TV equipment. Consult local cable operator

L&L ELECTRONIC ENGINEERING
1430 Miner Street, Suite 522
Des Plaines, IL 60016
Free Catalog 1-800-542-9425
Information 1-708-540-1106

Circle Reader Service Number 364

★★★★PRESENTING★★★★

CABLE TV DESCRAMBLERS

★★★★★ STARRING ★★★★★

JERROLD, HAMLIN, OAK

AND OTHER FAMOUS MANUFACTURERS

- FINEST WARRANTY PROGRAM AVAILABLE
- LOWEST RETAIL / WHOLESALE PRICES IN U.S.
- ORDERS SHIPPED FROM STOCK WITHIN 24 HRS.
- ALL MAJOR CREDIT CARDS ACCEPTED

FOR FREE CATALOG, ORDERS & INFORMATION **1-800-345-8927**

PACIFIC CABLE CO., INC.
7325½ Reseda Blvd., Dept. 1115
Reseda, CA 91335

Circle Reader Service Number 354

ORDER YOUR LIMITED-EDITION PENTHOUSE ONLINE 9600 DATA/FAX MODEM TODAY AND SAVE!

A CUSTOM, LIMITED EDITION PENTHOUSE ONLINE 9600 DATA/FAX MODEM FOR LESS THAN $170!

USRobotics
AA
CD
OH
RD
SD
DTR
RTS
CTS
ARQ/FAX
9600 Fax CCITT V.32 with V.42 bis

Penthouse magazine has teamed up with U.S. Robotics to offer a top-grade 9600-bps data/fax modem for only $169 (internal board) or $179 (external). These high-speed V.32-compatible modems feature V.42/MNP 2–4 error control, V.42bis/MNP 5 data compression, and throughput of up to 38.4. The external model (shown) has a custom, limited-edition black case with the famous Penthouse Key symbol.

Features include autodial and -answer, frequently called number storage, nonvolatile RAM (stores all modem settings), summary of current modem setting display, speaker with volume control, onscreen call progress reporting, five-year parts and service warranty, an extensive owner's manual, and a quick-reference card. The internal modem comes on a 10-inch board that fits all IBM PC bus-compatible computers, and can be addressed on COM ports 1–4.

ORDER YOUR CUSTOM MODEM TODAY!

Plus, you will also receive the BLAST® FAX PC™ fax software, which lets you send or receive faxes from your computer. Compatible with all G3 machines, BLAST® FAX PC™ allows transmission scheduling, hot-key faxing from within applications, background operation, and much, much more.

Circle Reader Service Number 107

CLASSIFIEDS

CABLE TV

CABLE TV DESCRAMBLERS

1-800-233-9388

FREE CATALOG

GUARANTEED BEST PRICES • IMMEDIATE SHIPPING

APPLE ELECTRONICS

3389 Sheridan St. • Suite 257
Hollywood, FL 33021

Circle Reader Service Number 366

CD-ROM

SHAREWARE

for **IBM** COMPATIBLE

Same Price for 3.5" or 5.25"

Shipping & Handling: $2/order

VISA / MASTERCARD

REGULAR ITEMS $1.25

F-PROTECT SUPERB Virus scanning/cleaning.

SCANV106 McAffee's Latest Virus scanner.

We will ship most recent version available!

WOLF3D-KILOBLAST-RESCUE ROVER-OVERKILL

ANCIENTS-SOLAR WIND-MEGATRON-MAHJONGG

NEVERLOCK-MAJOR STRYKER-hundreds more!

BIG ITEMS $2 on DSHD only!

MONSTER BASH Catacomb Abyss **GATE WORLD**

ZONE66 (386 only) **DARE** to **DREAM**(Windows)

KENSLAB (386 only) **CASTLE** of **WIND**(Windows)

CD's AT AMAZING PRICES !

Shareware Collections

JUST GAMES $15	**House of Games $20**
SWIMWARE 1993 $25	*We'll find what you need!*

Adults ONLY

NIGHTWATCH (Interactive Entertainment!)	**$52**
BUSTY BABES (I or II)	**$30**
STORM (II or III) **$37**	**BANGKOK $49**
SMUTWARE $25	**MANPOWER $31**
VOLCANO $60	**ALL BEAUTIES $29**

We have over 60 Adult titles Available!

FREE CATALOG !

ComPro Software
P.O. BOX 4426
Star City, WV 26504
1-800-PC-DISCS

Circle Reader Service Number 356

COMPUTER KITS

PC-BUILD COMPUTER KITS, THE RECOGNIZED LEADER in build-it-yourself PC's. Rec'd by PC-Upgrade and Pop. Science. Used in schools and training programs nationwide. Free catalog 1-800-798-6363

COMPUTER REPAIR

AUTHORIZED COMPUTER REPAIRS: C64/128, 1541/1571, SX64, 128D & Amiga. Selling DTK-comp computers. Quick service-30 day warranty MOM & POP's Computer Shop. 114 N. 16th, Bethany, MO 64424 (816) 425-4400

COMPUTER PROGRAMMING

LEARN C AND C++

Don't waste your time getting overwhelmed by 1000 page books and manuals. Get a working knowledge of Structured Programming, C, Object Oriented Design, and C++ quickly and easily. Order your overview today! It's only $19.95 plus $2.55 s/h. Send check or m/o to:

GSP Technologies, P.O. Box 1341,
Cambridge, MA 02142

Circle Reader Service Number 350

MARKETING

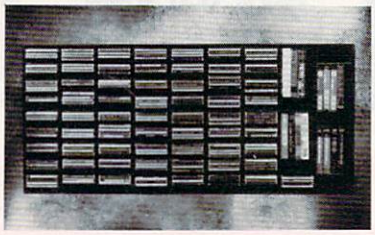
EVTEK

Evolved Technologies represents proprietary computer software/hardware solutions to the scientific, business and industrial community of the North East. 609-859-8333

MISCELLANEOUS

CD+ INTERIOR DESIGNS

"For the Serious CD Collector"



The only custom made cd/video tape storage unit of it's kind. Designed to match your existing decor and suit your storage needs. All of our models accommodate both compact discs and video tapes in a furniture quality, wall-mounted unit. You choose the capacity size (400+ CD minimum), wood type, and finish.

Now, you can turn your CD/video tape collection into your own personal library. At CD+ Interior Designs we use only top-quality solid wood and our expert craftsmanship produces a storage unit that you will be proud to display in your home.

For a copy of our free brochure call: 1-800-234-0859
Visa and Mastercard accepted.

Circle Reader Service Number 360

SKELETON KEY

FITS MOST LOCKS

(boltlocks, doorlocks, & some padlock)

Amaze Your Friends With A Lock Picking Demonstration. You get 3 sized tension keys, the slide pick, precise instructions & **much more**. Note: this device is to be used for demonstration purposes only!

Satisfaction Guaranteed or Full Refund.

Fascinating Recorded Details.
Call Now
Listen & Order 24 hrs. 1 (717) 656-1537

Safe Marketing 90 W. Montgomery Av No.366E Rockville Md 20850

MISCELLANEOUS

T-Shirts—The Ultimate Soft-Wear!

Many sayings, pictures, colors, . . . • When all else fails, read the manual • I've got the Computer Blues • The more people I meet, the more I like my computer • Don't Panic! . . . and many more

For more information please contact:
HYPERLIGHT ENTERPRISES
1208 Duthie Avenue, Burnaby, BC, Canada V5A 2R4
Wholesale Inquiries Welcome

Circle Reader Service Number 358

14 KT GOLD COMPUTERS.

Affordable 14 kt gold computer jewelry with micro-chip diamond inlay. Four exciting designs to choose from.

Perfect for the computer junkie in you, or as a gift for one that you know. It's hardware with a flare. Call 1-800-FUN-JEWL for our free brochure.

COMjewel™ Inc

Call 1-800-386-5395 or 1-800 FUN-JEWL

Circle Reader Service Number 347

POSITION WANTED

HOME TYPISTS,
PC users needed.
$35,000 potential. Details.
Call (1) 805 962-8000 Ext. B-30033

USED SOFTWARE

USED SOFTWARE FOR SALE

We buy & sell used current versions of most IBM compatible software. Not PC/Shareware. Completely legal. Software includes ORIGINAL DISKETTES/MANUALS guaranteed virus free. Call 8am–5pm EST Mon–Fri for free price list.

RECYCLED SOFTWARE 1-800-851-2425

Circle Reader Service Number 367

COMPUTE Classified is a low-cost way to tell over 275,000 microcomputer owners about your product or service.

Additional Information. Please read carefully.

Rates: $40 per line, minimum of four lines. Any or all of the first line set in capital letters at no charge. Add $15 per line for bold face words, or $50 for the entire ad set in boldface (any number of lines.)

Terms: Prepayment is required. We accept checks, money orders, VISA, or MasterCard.

General Information: Advertisers using post office box number in their ads must supply permanent address and telephone number. Orders will not be acknowledged. Ad will appear in next available issue after receipt.

CLASSIFIED DISPLAY RATES

Classified display ads measure 2¼" wide and are priced according to height. 1" = $285; 1½" = $420; 2" = $550.

HOW TO ORDER

Call Maria Manaseri, Classified Manager, COMPUTE, 1 Woods Ct., Huntington, NY 11743, at 516-757-9562.

CLASSIFIEDS

SOFTWARE

WITH EMISOFT'S **PASSWORD BYPASSER** YOU eliminate annoying passwords. Disk Volume 1 only $34.95, or purchase separately only $5.00. Min of two per order. Call today 813-841-8769. **FREE S/H**

BUY/SELL USED SOFTWARE! LOWEST PRICES! FREE LIST. Specify 64/128, Amiga or IBM. Centsible Software, PO Box 930, St. Joseph, MI 49085. Phone: 616-428-9096 BBS: 616-429-7211

Computer Shareware/ASP Vendor
FREE ON-DISK-CATALOG*FREE Disk Offers
Toll Free Order Line - VISA/MC
IkeaMo Ent., 0255W 300N, STE 11, Howe, IN 46746
Voice 219-463-5246 Fax 219-463-8454

NOT JUST SOFTWARE, ICA SOFTWARE
100's OF IBM AND IBM COMPATIBLE SOFTWARE
FREE CATALOG, VOICE/FAX 800-331-3065
P.O. BOX 1011-354, TRUMBULL, CT 06611

IBM SHAREWARE

Free catalog or $2 for sample & catalog (refundable). Specify computer. CALOKE IND (B), Box 18477, Raytown, MO 64133

Circle Reader Service Number 351

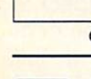
BEST VALUE - IBM-APPLE SHAREWARE & PD
CHOOSE FROM OVER 1000 DISKS.
FREE CATALOG OR $2.00
FOR CATALOG/DEMO (SPECIFY COMPUTER)
MC/VIS ACCEPTED. NEXT DAY SHIPPING AVAILABLE
CHRISTELLA ENTERPRISE, P.O. BOX 82205
ROCHESTER, MI 48308-2205

Circle Reader Service Number 368

FREE! IBM PD & SHAREWARE DISK CATALOG
Low prices since 1988! ASP Approved Vendor. Finto Software, Dept. M. Rt. 2, Box 44, Rosebud, TX 76570 or Voice/FAX (817)583-2151. VISA/MC accepted.

ADULT-ORIENTED SOFTWARE
For IBM VGA, Color Mac, and Amiga.
Check out our huge collection of
X-citing Adults Only Software.
Free lists (You must be over 18).
CLEARLIGHT SOFTWARE, Dept. CO
P.O. Box 1411, Milwaukee, WI 53201
(414) 962-2616

Circle Reader Service Number 353



CompGuard **$14.95**
SENTINEL® Plus $2.00 S&H
★★★SECURITY★★★
BOOTABLE PASSWORD/SECURITY PROGRAM
Deter the nosey/mischievous from getting your "C>" prompt. Runs from AUTOEXEC.BAT. Stops **unsophisticated** users in their tracks. DOS, EGA/VGA. Check or M.O. Give disk size.

GIFT IDEA!
Custom Programming of Your Personal Message!
Your greeting will display each time program runs!
1-800-248-2168 for pricing & details.

COMPUTICON, 11635 Arbor, #220, Omaha, NE 68144

Circle Reader Service Number 355

SOFTWARE

UNIQUE SOFTWARE!

Outstanding IBM software selected specially for Home and Office use.
• 1000's of programs • ASP Member •
• Lowest Prices Anywhere! •
• Money-Back Guarantee! •
• FREE DETAILED CATALOG •
THE PC ARCADE
14 Moreland Ave. Oakville CT 06779

Circle Reader Service Number 357

FREE Update Catalog

(800) 347-6760 FAX (209) 432-2599

Call/FAX for our FREE Update catalog of New IBM PC & compatible PD and shareware releases. Send $2.00 and receive our catalog on disk (specify disk size) of over 3,000 titles and a coupon for 2 FREE disks on your next mail order (mail only). Send $9.95 for 3 disks of the latest VGA games (specify disk size).

BRE Software
VISA 352 W. Bedford, Suite 104M, Fresno, CA 93711 MasterCard

Circle Reader Service Number 261

IBM - COMMODORE 64 & 128 - AMIGA. 1000's of PD/Shareware programs on 100's of disks. Free listing or $1 for large descriptive catalog (specify computer). DISKS O'PLENTY INC., 8362 Pines Blvd., Suite 270B, Pembroke Pines, FL 33024

EDUCATION

How To Get A High-Paying Job In **COMPUTER PROGRAMMING**

Become more competitive in the job market with EDUCATION

Specialized Associate degree and diploma programs in computer programming, computer applications, systems analysis, and the RPG III, BASIC, COBOL, and C languages by
DISTANCE EDUCATION
Call or write for college catalog and booklet "How to Get a High-Paying Job in Computer Programming."

1-800-765-7247

C1193

PEOPLES COLLEGE OF INDEPENDENT STUDIES
233 Academy Drive • P.O. Box 421768
Kissimmee, FL 34742-1768
Member, D.L. Peoples Group • Accredited Member, NHSC

Circle Reader Service Number 362

B.S. & M.S.
In Computer Sciences

- In-depth degree programs with **all courses home study**.
- BS courses include MS/DOS, BASIC, PASCAL, C, Data File Processing, Data Structures & Operating systems.
- MS courses include Software Engineering, Artificial Intelligence and much more.

For free information call **1-800-767-2427**
2101-CC Magnolia Ave. S. • Suite 200 • Birmingham, AL 35205

AMERICAN
INSTITUTE
FOR
COMPUTER
SCIENCES

Circle Reader Service Number 363

SOFTWARE

LOTTO™ PICKER 3

HAVE YOU WON THE LOTTERY?
DO YOU OWN LOTTO PICKER™
WELL, WHAT DID YOU EXPECT!

LOTTO PICKER is your ticket to the riches! **LOTTO PICKER** works by discovering the hidden biases in every lottery game worldwide. Using this info to your advantage Lotto Picker will tell you exactly which numbers to play - no guess- work involved. Your Lotto Picker card will be loaded with combinations and number patterns most likely to be selected! Plays all Pick 3,4,6,7,10,11. Also plays games based on playing cards (MS-DOS only). FREE telephone support with each purchase. For MS-DOS, Apple II, and C64/128.
NEW LOW PRICE $29.95 (+$4.55 s/h). NY add tax.
SATISFACTION GUARANTEED OR YOUR MONEY BACK!
ORDER TODAY! 1-800-484-1062 s-code 0644 or 1-718-317-1961
GE RIDGE SERVICES, INC.,
848 Rensselaer Ave., Dept. CP
Staten Island, NY 10309

Circle Reader Service Number 365

The *ONLY* Lottery Systems With PROVEN JACKPOT WINNERS are those in Gail Howard's SMART LUCK® SOFTWARE Call Toll-Free 1-800-876-G-A-I-L. (See Her Ad in Product Mart.)

Circle Reader Service Number 369

EDUCATION

LEARN COMPUTERS!

Home study. Become a personal computer expert at home and in business. **Free career literature.**

800-223-4542

Name__________
Address__________
City__________ State____ Zip______

THE SCHOOL OF COMPUTER TRAINING
2245 Perimeter Park
Dept. KM680 Atlanta, Georgia 30341

Circle Reader Service Number 348

Be a computer repair expert!

Home study. You could earn great money troubleshooting, repairing, upgrading, and installing PCs. Send or call now for free career literature.

800-223-4542

Name__________ Age____
Address__________
City__________ State____ Zip______

The School of PC Repair
6065 Roswell Rd., Dept. JM680
Atlanta, Georgia 30328

Circle Reader Service Number 349

NEWS BITS

Jill Champion Booth

Getting out of the office, taking stock, looking at new art, and listening to what women have to say

Just the Fax

Faxes are hot items for the home right now—a trend that's seen dramatic growth in the past year and one that's likely to survive well into the future, according to BIS Strategic Decisions, a market research and consulting firm based in Norwell, Massachusetts. But the reason isn't based on price.

"The expansion of fax into the home is based on need, not because equipment prices are declining," explains Judith Pirani, director of BIS's Image Communication Systems Market Advisory Service. Business patterns are changing: More people are bringing work home in the evening, more people are telecommuting, and new business startups from the home are on the increase.

"The home is starting to emerge as the next important market segment for the fax industry. In fact, BIS believes sales of home fax machines will eventually overtake sales of business fax machines," Pirani says.

And More Facts

Three trends cited by Barbara Gilbertson, national sales manager for AT&T's Professional Development Center, were responsible for the organization's whopping 39-percent increase in students during the first half of 1993—and they're likely to affect *your* business future as well.

First, a large number of offices are changing to the Windows environment and Windows versions of software.

Second, an increasing number of companies are putting their salespeople on the road virtually full-time by teaching them to use laptop computers to transmit orders and correspondence.

And third, companies are continuing to reduce the number of employees. Having fewer clerical employees means that more managers must prepare their own correspondence and their own data analyses, and that's generating a need for managers to learn more about using software.

Close, but No Chagall

But then, no one expected Chagall last summer when HSC Software of Santa Monica, California, held a showing of five artists' digital art collections at the Franklin Institute Science Museum's Cutting Edge Gallery in Philadelphia.

Known for its unique approach to presenting science and technology exhibits, the Franklin Institute's goal, according to gallery coordinator Edward Wagner, was to show museum visitors how the advent of digital technology is changing the face of what we call "art"—how artists have "used the computer as an avenue of unlimited exploration into new art forms and styles."

As part of the showing, HSC installed an interactive presentation describing the artists' displayed work and a painting program for visitors to try. After all, the artists used programs like Adobe PhotoShop and Fractal Design Painter—affordable software available to everyone—to create their original works. Wagner says the digital art show received excellent reviews and "really opened a lot of eyes to the power of today's computer-graphics programs."

Not the Time to Stock Up

It definitely wasn't a bull market. Milk cow was more like it if you sank a lot of funds into computer stocks this year.

According to the July 1993 "Software Industry Bulletin," published by Digital Information Group of Stamford, Connecticut, consumers were better off investing in stocks other than software for the first half of 1993.

"The stock prices of 61 publicly held software companies rose only 3 percent during that time—well behind the 6.5-percent jump in the Dow Jones Industrials Average and the 3.6-percent rise in the Standard & Poor's 500 Index," the report says.

Exceptions were companies that went public in the first six months: IntelliCorp showed the best performance with a 284.6-percent gain, Lotus gained 76.4 percent, and Adobe gained 96 percent in the first six months.

Girl Talk

What's the secret of Echo, a New York–based online service that sports a 37-percent female membership?

According to founder Stacy Horn, in an interview with the *Village Voice,* women are more comfortable with the conversations on Echo because 50 percent of the conferences are hosted by women—who set the tone.

Horn says other online networks designed by men turn women off because "women are not interested in the endless debate that some men like to engage in. They communicate in a way that women walk away from." Of course, men are still welcome on Echo, but they can't expect to "attend" all of the online conferences. WIT (Women In Telecommunications) and WAC (Women's Action Coalition) are two for women only. But don't feel left out, guys; MOE (Men On Echo) is available for men-only conversations. (Horn says MOE is "dead as a doornail"—apparently, the guys are more interested in what the girls have to say.)

If you're interested in registering on Echo, log on as a new user at (212) 989-8411. ☐

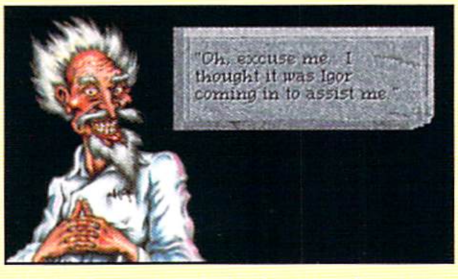
The rest should be a piece of cake.

Fantasy

Fright-filled fun for adventurers tired of playing by other people's rules.

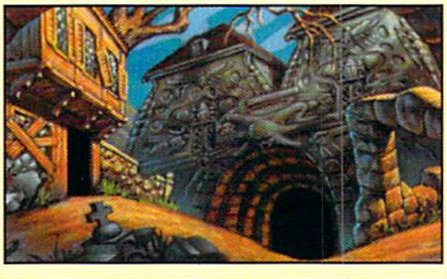
You've entered a world of horror and mystery where *you* decide what type of hero you are, and what kind of adventure you're on. Save Mordavia from blood-sucking ghouls through wits, will, or wizardry. A fascinating blend of dark Transylvanian settings and light humor. Sequel to *Computer Gaming World's* Adventure Game of the Year.

- All-new advanced icon system gives you more options and more in-depth conversation.
- A new combat mode lets you fight on your own terms, from strategic skirmishes to thumb-twitching arcade assaults.
- Three games in one: replayable adventures as Fighter, Magic User or Thief.



"Oh, excuse me. I thought it was Igor coming in to assist me."

Macabre characters may either thwart or aid you in your quest.



Eerie settings lend just the right amount of horror to the blend.

QUEST FOR GLORY

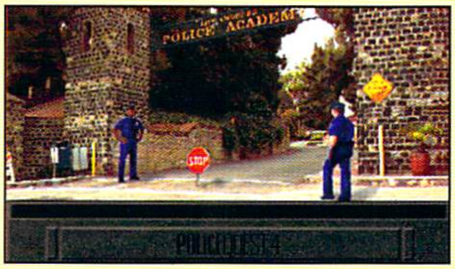
Shadows of Darkness

Reality
POLICEQUEST4

The first body was found at 3 a.m., tortured and mutilated.

Just another body in another alley on another morning in the City of Angels. But this one is more than a statistic to you. He's your ex-partner. Now you must find the killer before he—or she—strikes again. Make a mistake and you could be the next victim. Play it by the book and you might just stay alive. You can't get any closer to the crime scene without a badge.

- Authored by the most experienced cop in the world, Daryl F. Gates.
- All-new ultrarealistic digital photography shot on location throughout Los Angeles and Southern California.
- A story ripped from today's headlines.
- State-of-the-art sound effects and music, including rock, rap, and hip-hop.



Play this one by the book and you might stop a serial killer before he - or she - strikes again.

Digitized crime scenes make this the most realistic Police Quest *yet.*

Daryl F. Gates'
POLICE QUEST
OPEN SEASON

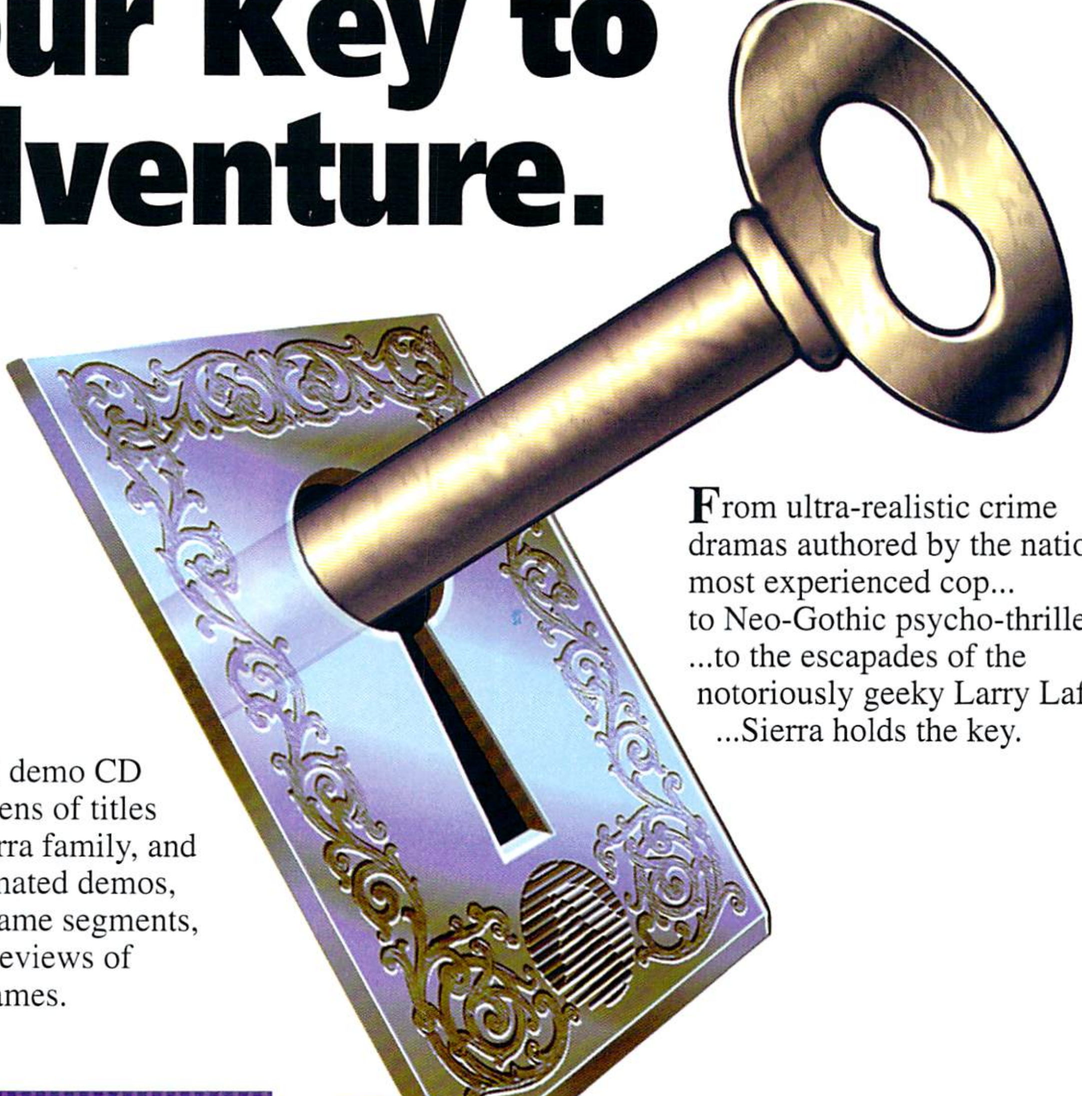
I unraveled the riddle of the amulet...

I sealed off the crime scene...

I unearthed the vampire's tomb...

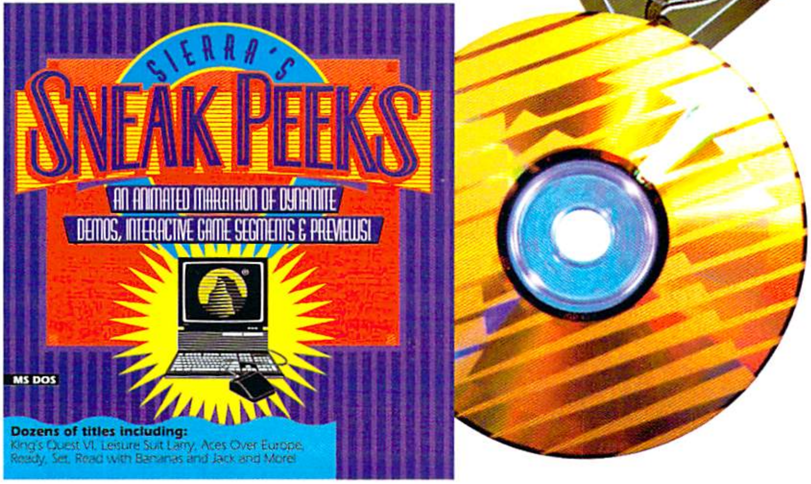
So they gave me the key to the city...

Call Sierra for Your Key to Adventure.



From ultra-realistic crime dramas authored by the nation's most experienced cop... to Neo-Gothic psycho-thrillers ...to the escapades of the notoriously geeky Larry Laffer ...Sierra holds the key.

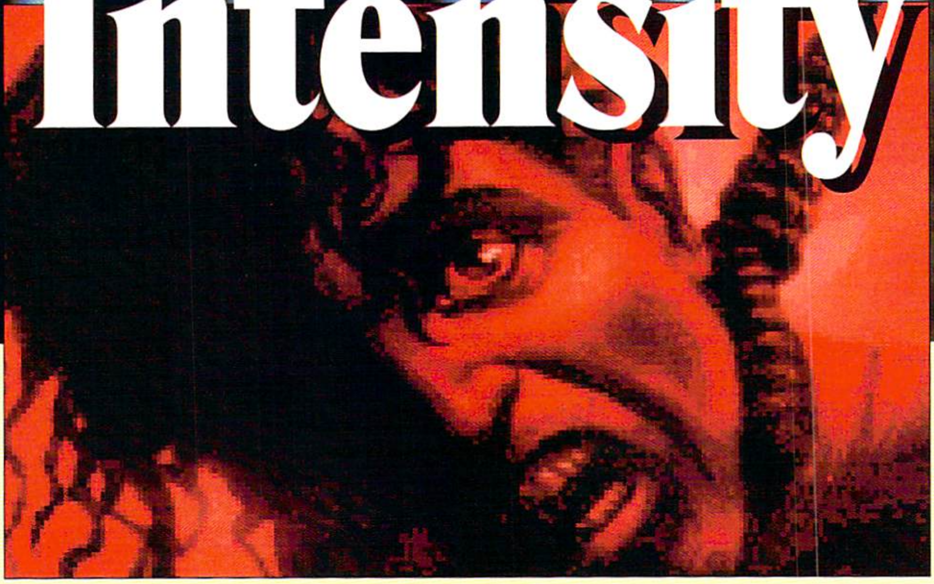
Our special demo CD contains dozens of titles from the Sierra family, and features animated demos, interactive game segments, and sneak previews of upcoming games.


SIERRA'S
SNEAK PEEKS
AN ANIMATED MARATHON OF DYNAMITE
DEMOS, INTERACTIVE GAME SEGMENTS & PREVIEWS!
MS DOS
Dozens of titles including:
King's Quest VI, Leisure Suit Larry, Aces Over Europe, Ready, Set, Read with Bananas and Jack and More!

To order your key to adventure, call 1-800-757-7707. The CD demo costs $8, and includes an $8 coupon good toward the purchase of any Sierra CD game.

SIERRA®

Intensity



"The first time we have actually experienced fear from watching a computer game product."

-Computer Gaming World

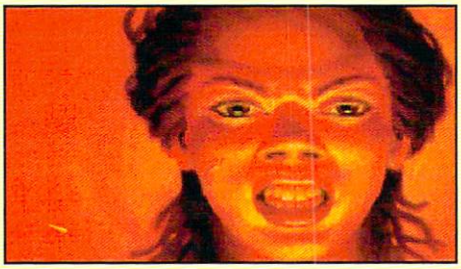
He started out writing a book on voodoo. Now he's fighting for his very soul in this dark, erotic journey into the supernatural.

Gabriel Knight spends his every waking moment scouring the side streets and alleys of New Orleans for the key to his dark past.

And when he sleeps–the nightmare begins.

- Stylishly designed and richly written—a true Neo-Gothic computer novel.
- Impressive 3-D, high-resolution graphics breathe life into this psycho-thriller.
- Winner of *Game Bytes*' "Best of Show" award for product excellence at the Summer CES.
- By the co-author of *King's Quest VI,* 1992's best-selling adventure-role playing game.

Stunning illustrations and a spellbinding story will haunt your dreams.

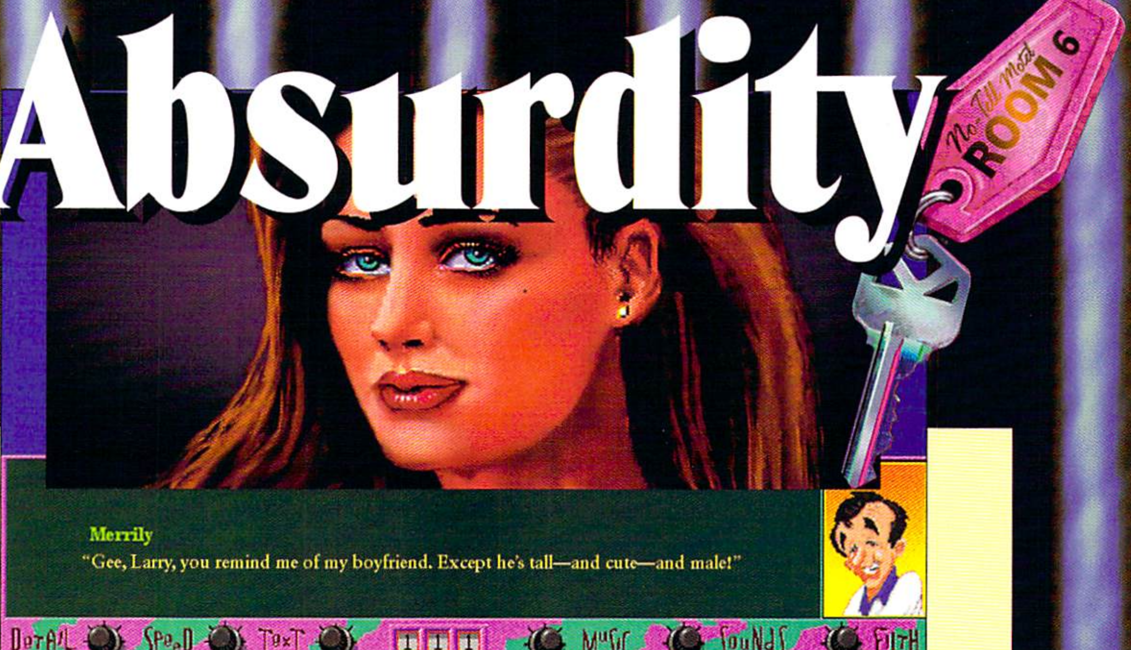


Unsettling realism and visual imagery draw you into this Neo-Gothic thriller.

GABRIEL KNIGHT

Sins of the Fathers

Absurdity



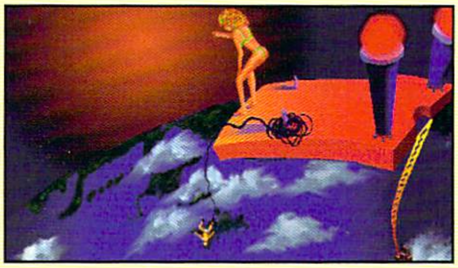
Merrily

"Gee, Larry, you remind me of my boyfriend. Except he's tall—and cute—and male!"

The computer entertainment industry announces a new Lowe.

You're Larry. And that's the *good* news! This time around you're off to a posh resort spa. You're surrounded by luxury ... and ten gorgeous girls! How could you possibly mess this up? Easy! After all, Larry, the most popular nerd in computer game history, was designed by award-winning Al Lowe, the second most popular nerd in computer game history!

- Ten, count 'em, ten, bodacious new babes.
- More babes than ever. Ten of 'em.
- Babes galore. Ten, count 'em, ten.
- Did we mention the babes?



You'll be on top of the world when you play Leisure Suit Larry.

Does she look digitally enhanced to you?

LEISURE SUIT LARRY

Shape Up Or Slip Out

2 Gifts *for the* Price of 1!

2 COMPUTE gift subscriptions for only $19.94

Save 50%

off the regular subscription price

(Single gift is $14.97)

☐ Payment enclosed ☐ Bill me

Charge ☐ Visa ☐ MasterCard

ACCOUNT # EXPIRE DATE

SIGNATURE

Please allow 6-8 weeks for delivery of first issue. Canadian orders send $42.74 for 2 gifts or $26.72 for 1 gift (includes GST). Other foreign orders send $39.94 for 2 gifts or $24.97 for 1 gift. Payment acceptable in U.S. funds only.

Regular subscription price for 12 issues is $19.94. YPLP9

Send first one year gift to:

NAME

ADDRESS

CITY STATE ZIP

Send second one year gift to:

NAME

ADDRESS

CITY STATE ZIP

From:

NAME

ADDRESS

CITY STATE ZIP

☐ ***Please enter my subscription as one of the two gifts.***

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 112 HARLAN, IA

POSTAGE WILL BE PAID BY ADDRESSEE

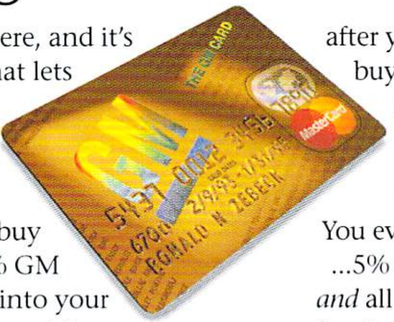
COMPUTE
P.O. BOX 3244
HARLAN, IA 51593-2424

Marriott
HOTELS · RESORTS · SUITES
4-Night Stay
GM Partner Bonus $74.00
GM Bonus $18.70
GM Bonus $3.25
Mobil
15 Gallons Mobil Super
GM Partner Bonus $1.75
GM Bonus $18.65
GM Bonus $210.00
GM Bonus $38.99
GM Bonus $2.75
GM Bonus $6.95
GM Bonus $17.50
GM Bonus $4.00
GM Bonus $2.30
MCI
5 Long Distance Calls
GM Partner Bonus $1.27
UP TO
$1,000
A YEAR
toward a new GM car or truck. Plus all the advantages of a Gold MasterCard.
GM Bonus $10.25
GM Bonus $109.95
GM Bonus $22.50
GM Bonus $2.20
GM Bonus $47.25
Caribbean Cruise for Two
GM Partner Bonus $533.80
with GM Travel Services
GM Bonus $4.45
GM Travel Services℠
Northwest Round-Trip Ticket, Chicago to San Francisco
GM Partner Bonus $59.50
through GM Travel Services
Dinner for Two
GM Bonus $9.00
GM Bonus $8.75
GM Bonus $3.75
Continental
Round-Trip Ticket, Newark to Dallas
GM Partner Bonus $50.30
GM Bonus $65.50

Don't Spend More, Spend Smarter.℠ Introducing The New GM Gold Card.℠

The new GM Gold MasterCard is here, and it's the only credit card in the world that lets you earn **up to $1,000 a year** toward your choice of over 100 new GM cars and trucks.

Simply use the GM Gold Card℠ to buy items as you normally would. A 5% GM Bonus – up to $1,000 a year – goes into your GM Bonus Account. Plus, you get an additional 5% on GM Card Partner purchases (even after you've reached $1,000). When it's time to buy or lease a new GM vehicle, you take any rebates or incentives that apply, then use your GM Bonus Account to save hundreds, even thousands of dollars more!


THE GM CARD
GM
5477 0000
MasterCard

You even earn a 5% bonus on balance transfers* ...5% on things you've already bought! All this *and* all the advantages of a Gold MasterCard. So don't spend more, spend smarter...with the new GM Gold Card.

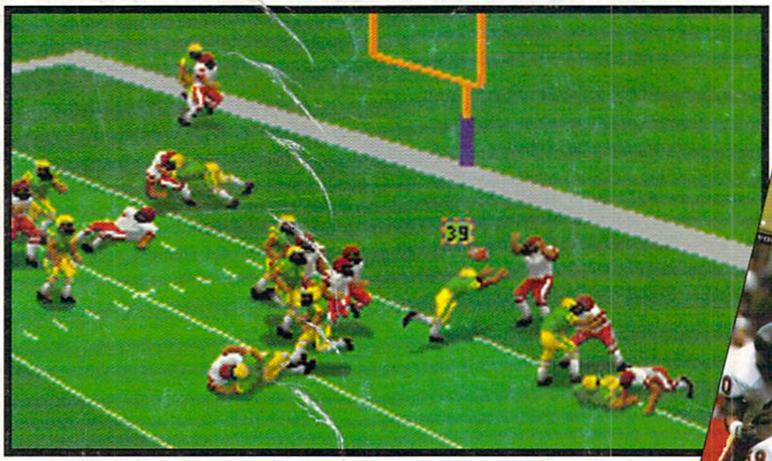
The GM Gold Card. To Apply, Call 1-800-846-2273.

Offer is redeemable as discount on purchase or lease of a new GM car or truck. Up to $1,000 annually, or maximum of $7,000 over 7 years. May be combined with other offers. Subject to GM Gold Card Rebate Program Rules. Mobil Partner Bonus not available in New Jersey. GM Travel Services provided by Carlson Travel Group, Inc. *There is no transaction fee for Transfer Checks; normal finance charges apply from the date of posting. ©1993 General Motors Corporation.

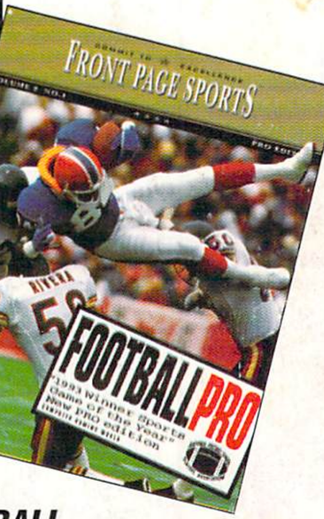
Spalding and Top Flight are registered trademarks of Spalding and Evenflo Companies, Inc. Eager Beaver™ McCulloch is a registered trademark. Hamilton® Viking is the registered trademark of Viking Range Corporation. Black & Decker® IBM is a registered trademark, and Valuepoint is a trademark of the International Business Machines Corporation. Weber® Genesis® 5000 Series Gas Barbecue. Evan-Picone is a registered trademark. Bose® is a registered trademark of Bose Corporation.

Circle Reader Service Number 198

SWITCH TO SPRINT® AND SCORE!



Screen shot from Dynamix's exciting new release *Front Page Sports: Football Pro.*



TWO FREE GAMES!*

Switch your home long-distance service to Sprint® and get *FOOTBALL PRO*™ or any other Dynamix or Sierra On-Line game FREE! Then, in six months – pick a second free game.*

Only Sprint® can offer you a nationwide 100% digital, fiber optic network that provides the long-distance quality and reliability you need. Experience for yourself Sprint's "fiber optic" clarity that makes both your long-distance calls and PC data transmissions crystal clear and error free.

Unsurpassed clarity is just one of the many benefits you will enjoy as a Sprint Customer…

The Most® – A Unique Calling Plan
Sprint offers an unprecedented long-distance calling plan called The Most available now for all customers. The Most will save Sprint Customers 20 percent on already low rates on their calls each month to whomever they talk to the most, including international calls – even if the called person is with a competitive long-distance carrier.

The Most will also provide automatic 20 percent discounts on all calls to Sprint's millions of Dial 1 customers, anytime and anywhere.

When the person you talk to the most in a given month is a Sprint Customer, Sprint will combine both discounts for an effective overall savings of 36 percent on calls to that number.**

Save on Long Distance When You're Away From Home Too!
Sprint's FŌNCARD℠ travel card lets you continue to take advantage of clear calling and savings even when you're away from home. Plus, the FŌNCARD is free, with cards available to every member of your family.

The Service You Deserve
At Sprint, we make no compromises when it comes to dependable, personal service – we do it all; operator services, directory assistance, customer service, even instant credit for wrong numbers. And we do it 24 hours a day!

No Risk Guarantee
Your satisfaction is guaranteed: we'll pick up the cost of switching your long distance to Sprint and will even pay to switch you back if you are not completely satisfied. (Some restrictions apply.)

Sign up for Sprint and receive the clarity, savings and service you want and get two Sierra On-Line or Dynamix games – Free!

Betrayal at Krondor
ACES OVER EUROPE
PINBALL

1-800-877-1995

Circle Reader Service Number 148

Sprint SIERRA® Dynamix®
PART OF THE SIERRA FAMILY

* Offer valid only in the U.S. and for new Sprint Customers. Not valid for FŌNCARD-only orders. Certain restrictions apply. To qualify for a second game the customer must bill $20 per month in 3 of the first 6 months. One offer per household.
**The Most discounts apply to in-state/intraLATA calls only where authorized.